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GOVERNMENT OF INDIA.

REPRINT NO. 15 OF RECORDS IN THE PUBLIC WORKS DEPARTMENT.

PROGRESS REPORT

OF

FOREST ADMINISTRATION

IN THE

PROVINCE OF OUDH,

1867-68.

By CAPTAIN E. S. WOOD,
CONSERVATOR OF FORESTS.

WITH OTHER PAPERS
RELATING TO THE
MANAGEMENT OF FORESTS IN OUDH,
AND A MAP.

CALCUTTA:
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PROGRESS REPORT

OF

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IN THE

PROVINCE OF OUDH,

1867-68.

By CAPTAIN E. S. WOOD,

CONSERVATOR OF FORESTS.

REVIEW BY THE CHIEF COMMISSIONER.

No. 1353, dated 10th September 1868.

From—Lieut. Col. C. W. Hutchinson, R. E., *Secretary to the Chief Commissioner, Oudh, Public Works Dept.*,

To—*The Secretary to the Government of India, Public Works Dept.*

I have the honor, by direction of the Chief Commissioner, to submit the Annual Progress Report of Forests in this Province for 1867-68, together with Chief Commissioner's review thereon.

Review, dated 4th September 1868, *by Chief Commissioner.*

The Progress Report of the Oudh Forests for 1867-68 has been prepared by Captain Wood, who has officiated as Conservator of these Forests throughout almost the whole of the past official year, (having taken over charge from Mr. Read on the 20th April).

2. This Report has been prepared in accordance with the instructions conveyed in the Forest Department Standing Order No. 2, dated 8th October 1866: and the several points noted by the Government of India in reviewing the Progress Report for 1866-67, (Public Works Department, No. 38 F, dated 22nd January 1868, paras. 24 and 27) have been attended to by the Officiating Conservator, who has divided this Report into numbered paragraphs, and has restricted the number of figured statements to the eight prescribed Forms.

3. In reviewing the Report, the same headings as those adopted by the Officiating Conservator (in accordance with the Standing Order above quoted) will be followed.

I.—Inspection of Forests.

4. The inspections of the Officiating Conservator were confined to the 1st and 2nd Divisions, more especially to the former: the 3rd Division was not visited, owing to the fact that the Settlement and Survey Officer (deputed

to the duty of Forest demarcation) was engaged in laying down the boundaries between Oudh and the North-West Provinces, and could not proceed with demarcation work in the Gonda District. Moreover, the grazing, &c., contracts of the 3rd Division still remained (pending regular settlement) in the hands of the Maharajah of Bulrampore.

5. As now, however, a full staff of assistants has been appointed to the Oudh Forests, the Conservator will be able in the approaching working season to devote himself to a thorough inspection of the 3rd Division, and to carrying out its demarcation and arrangements for proper conservancy.

6. A map of the Forests and a description of each division has been furnished by Officiating Conservator in this Report; and he has commented fully on many points noticed by him during his inspections; and of these the following appear to be the most important.

7. The River Sardah having completely shifted its channel near Kulkhan Ghât, the Forest bridge of boats, which has been for some time maintained at that site, had to be moved to a new locality, and was for the season set up at Diggia Ghât.

8. As, however, the Forest operations are now carried on further to the south than formerly, Maroucha Ghât has been selected as the future site for the bridge. It is contemplated by the District authorities to construct a road from Doodooa Ghât on the Sohelee, *viâ* Pullia, to Maroucha Ghât and thence to Bhira, whence district roads now lead to the south and south-west. This question is treated by Officiating Conservator under the heading of "General Observations" in connection with the question of export routes.

9. The Officiating Conservator reports on the progress made in erecting boundary pillars. Those in the 1st Division are permanent and of masonry; while in the 2nd Division they are of timber.

These latter will suffice for a few years, and will serve the purposes of the Revenue Surveyors.

They should, however, be *gradually* replaced by permanent pillars of masonry.

10. In regard to the destruction of creepers, it is satisfactory to note that the 1st Division has been entirely, and the 2nd Division very nearly, cleared of these destructive agents: and that there appears but little tendency to their reproduction, except in rare instances. As roads are opened out, compartments formed, and supervision increased and placed on a methodical basis, there should be no difficulty in keeping the forests free from creepers without any additional cost.

11. The rate per acre, deduced from the work executed to the close of 1867-68, appears to be 2 annas 5 pie per acre; but this rate will be much reduced when the whole area of Forests shall have been cleared of creepers, as the remaining tracts are comparatively free from them.

12. Fires appear to be even more injurious to the growth of the trees than are the creepers; and a gloomy picture of the disastrous effects of the ravages of this fatal enemy are drawn by the Officiating Conservator.

The Conservator does not, in the Chief Commissioner's opinion, exaggerate the evil done to the forests by fires. The Chief Commissioner, who has now seen a great deal of the forests and their occupants, doubts if these can be immediately put a stop to, as it would be out of the question entirely to exclude, from this part of the country the enormous herds of cattle sent to graze there.

But the Chief Commissioner is inclined to think that wide ditches might be dug round the parts on which the trees, whether young or old, grow, and in order to isolate them the grass might then be fired without damage to the trees, and the Tharoos might still continue to cultivate the low lands. The subject will be further considered in consultation with the Civil authorities.

13. In the 46th para. of his Report, the Officiating Conservator draws attention to the injury caused by allowing contractors to cut trees in the Forests. This practice is, of course, very objectionable, and is, in fact, prohibited by the Government of India,—*vide* para. 13 of Public Works Department No. 38F, dated 22nd January 1868,—and must on no account be allowed again in the Oudh Forests.

14. The question of the resumption of waste land grants south of the Sardah, alluded to in the 5th para. of the Government letter above quoted, is still under consideration. These tracts were only cursorily inspected by the Officiating Conservator in November 1867, and a second complete inspection, which was intended in April last, was prevented by the illness of that officer. The importance of retaining lands stacked with inferior timber as fuel reserves, to be carefully managed by the Forest Department, is fully appreciated by the Chief Commissioner, and the case of the tracts above referred to (as well as of the Rajghur Singha Jungles in Baraich) is under consideration; but owing to legal claims set forth in regard to them, which will require adjudication in the Regular Courts, there must be some delay in a final settlement of the question.

15. It may be observed also, in regard to the case of the Charda Jungles, (referred to by the Officiating Conservator in the 38th para. of his Report) that the question is one requiring judicial settlement in the District Courts, before further action can be taken by the Chief Commissioner.

16. In the 6th para. of the Government of India's letter above quoted, it is requested that "a statement may be prepared showing the area of the different tracts of Reserved Forests as finally demarcated, with a short description of each tract." This request has been complied with by Officiating Conservator as far as was possible under the circumstances. It is shown in Appendix IV that the areas of the Forest Divisions may be assumed to be as follow:—

1st or Khyreeghur Division	...	...	..	263	square miles.	
2nd „ Baraich „	...	...	...	269	„	„
3rd „ Gondá „	...	...	...	170	„	„
		TOTAL ...		702	„	„

RESERVED FORESTS.

17. It was observed by the Government of India, in reviewing the Oudh Forest Progress Report for 1866-67, that the term "strictly reserved" was hardly applicable to the Oudh Forests as long as they were thrown open to neighbouring villagers who could cut timber (not reserved) at pleasure. The term "reserved" was, however, intended to express that the forests of this province were intended to belong to that class of Government forests to which the term of Reserved Forests is officially applied; although all arrangements for ensuring the strictest conservancy may not have been completed.

18. The policy of this administration, in regard to the mode and extent of intended conservancy, was enunciated in this office letters No. 641, dated 5th June 1867, and No. 954, dated 2nd July 1867; but in these letters it was

shown that many of the proposed measures would be tentative only, and that unless the conservancy rules were gradually introduced, and the restrictions leniently enforced, the population in and around the forests would be rendered discontented.

19. This question has occupied the attention of many officers throughout the past year, and as demarcation has proceeded, although the liberal rules in regard to additional areas of waste land included within the new boundaries of villages have been carried out (as explained in the former of the two letters above quoted), much difficulty has been experienced in satisfying the talookdars and villagers; and the time of the District officers and of the Forest officials has been taken up with considering the conflicting claims of all concerned; and numerous questions have been referred to the Divisional Commissioner, to the Financial Commissioner, and to this office; so that, although the subject has received unremitting attention, but little progress has yet been made towards its solution. It would therefore be premature at this time to submit any further report on the subject of "fuel allotments," "rights of villagers to fuel and grass," "grazing rights," &c., all of which are still under consideration.

These questions can only be settled in consultation with the Civil authorities, to whom it is necessary that the Conservator should freely apply for information and advice. Captain Wood has not been sufficiently alive to his duty in this respect.

Plantations.

20. No work was executed in 1867-68 in tree-planting, and the management of the Oudh Forests is scarcely as yet in a sufficiently advanced state to allow of this branch of conservancy being initiated.

Yield of Forests.

21. In opening out 15 miles of new roads (100 feet wide) through the Forests, a good opportunity occurred of ascertaining the average yield (per acre) of reserved woods; and Captain Wood's experiments showed a result of 71·5 trees of reserved sorts in each acre.

The yield of *Sâl* was as follows:—

1st Class.	2nd Class.	3rd Class.	4th Class.	Total.
2·9	3·5	9·8	19·0	35·2

As, however, these surveys were conducted in a portion of the forests where felling has lately occurred, it may be better to accept Dr. Brandis's original estimate of 3·3 1st class Sâl trees per acre; and if Captain Wood's assumption be accepted as correct, that but one log can be obtained from three 1st class Sâl trees, Mr. Read's estimate of 1·1 Sâl logs per acre will probably prove to be right.

22. Captain Wood has also considered the question of the growth of Sâl wood in the Oudh Forests, and has arrived at the conclusion that at sixty-five years of age a Sâl tree reaches 2nd class dimensions, and that it requires thirty-three years more of growth to reach 1st class size. Dr. Brandis had before assumed fifty years and eighty years as the ages of 2nd and 1st class Sâl trees respectively.

In either case, an interval of thirty years may be assumed as necessary for 2nd class to become 1st class trees.

23. From the above data Captain Wood has deduced that, during the next twenty-three years, 4,000 1st class logs can be obtained annually from the Khyreeghur or 1st Division of forests, and a similar number from the other two divisions; or 8,000 logs in all, every year.

24. Captain Wood urges, however, that, could fires be stopped entirely, this yield might be trebled; but, as above remarked, this question is a difficult one, and is under consideration with the general subject of the rights of the neighbouring population. The stoppage of firing the jungles may involve the closing of the forests to all grazing, and the consequent migration of the pastoral population to Nepal.

And even if it be proved to be financially beneficial to Government to abandon all profits from grazing and minor forest dues, and from the land revenue paid by the Tharoo villages, and to look for ample compensation in enhanced receipts for timber, yet political and other considerations may outweigh these advantages; and it may even be found that, if fires in connection with the grazing interests be entirely stopped, the dense vegetation will so choke up the forests that they will become fitted only for wild animals, and inaccessible to the Forest Department.

25. The plan of collecting the minor Forest dues by direct departmental agency has been in force in the 1st and 2nd Divisions throughout the past year, and although it has proved financially more remunerative than the old farming system, it has not been found in other respects to be satisfactory; and it is probable that for the future contracts for these collections will be leased, but at higher rates than formerly obtained. A schedule of rates is appended to the Officiating Conservator's Report, but it must be explained that this schedule has not yet been approved by the Chief Commissioner, and that, in fact, it has now for the first time been submitted by the Officiating Conservator for the Chief Commissioner's inspection.

This schedule of rates for forest produce will be sent to the Commissioners of Seetapore and Fyzabad, who will be requested (after consultation with the Deputy Commissioner) to report whether they recommend their adoption, or would propose any amendments.

26. It is urged by the Government of India, in the 10th para. of the Public Works Department Secretary's No. 38 F, dated 22nd January last, that great diligence should be used to remove from the forests the felled timber there remaining. On the 1st April 1867, 5,559 logs were thus lying in the forests; of these 1,894 were brought to depôts during 1867-68, and 750 more have since been removed from the forests.

27. The detailed proposals for re-commencing felling operations (called for in para. 12 of the above quoted letter) have not yet been submitted by the Officiating Conservator, but as that officer has proceeded to Simla with a view to consulting the Inspector General of Forests on this and other subjects, it is hoped that a commencement of felling on some determinate plan may be made during the approaching cold weather.

Financial Results.

28. The financial results of 1866-67 may be thus summarized :—

Receipts from sale of Timber of all kinds	...	...	Rs.	38,240	15 7
Minor and miscellaneous forest produce, &c.	...	...	„	28,211	15 11
	Total	...	Rs.	66,452	15 6
Expenditure	...	...	„	93,633	8 6
	Deficit	...	Rs.	27,180	9 0

But during the year the assets (chiefly value of stock) rose from Rs. 32,012-12-10 on 1st April 1867, to Rs. 85,712-5-7 on 1st April 1868, and the difference, Rs. 53,699-8-9, must be credited to the department: thus showing a net profit, from the working of the Forest Department in Oudh during 1867-68, of Rs. 26,518-15-9.

29. This result is satisfactory, although it does not compare favorably with the revenue of 1866-67. But it must be borne in mind that the revenue of that year was unusually favorable, and was credited with the full amount of very extensive sales effected at Cawnpore in 1866, while a large proportion of the cost of carrying the logs from the Forest to Cawnpore fell on the revenues of the year under review.

30. The financial results of the working of the Oudh Forests for six and a half years, up to the 1st April last, show a surplus of Rs. 2,22,312-8-8.

General Remarks.

31. The principal questions of importance, in regard to the conservancy of these forests, have been discussed above under their appropriate headings, and it appears necessary, in addition, to notice only the subjects of Forest Roads and Routes, and of Establishments.

32. It is only since the close of the year under review that the full complement of officers, as now sanctioned by the Secretary of State, has been entertained; and during the approaching working season there will be, in addition to the Conservator, an Assistant in each of the three divisions. But in 1867-68 but one Assistant (who has since left the department) was employed, and that only for the last half of the year. An Overseer was entertained on probation, but it was found that, even for subordinate appointments, no European of a low social status could be satisfactorily entrusted with the duties of directing such duties as the collection of revenue, settlement of boundary disputes, arrangement for contracts, &c. The Overseer was dismissed, and a gentleman, in a Junior Assistant's grade, has been secured on the salary sanctioned for the appointment.

33. The question of Export routes and Depôt sites has been discussed at length by Officiating Conservator in this Progress Report, and the orders of the Chief Commissioner on this subject, as conveyed in this office letter No. 2913, dated 25th March 1868, are quoted in full in para. 104.

34. For a Central depôt for the whole of the Khyreeghur Forests, Doodooa Ghât on the Sohelee is a convenient site; and roads radiating thence into all parts of the forest are under construction. From Doodooa Ghât carts can proceed *viâ* Pullia to the forest boat bridge over the Sardah at Maroucha Ghât, and thence it is contemplated to make a district road to Bhira, which is already in communication with systems of district roads to the south and west.

35. But it will not be expedient to spend any of the Forest Revenues in roads leading to the Kunhout and Rohilkund; the working of the Oudh Forests yearly tends eastwards, and the true route for their exports is *viâ* the Sohelee into the Gogra; and Byram Ghât is the mart to which the Oudh Forest produce should converge.

36. Byram Ghât will ere long be connected with Lucknow and Cawnpore by railroad; and then the cheapest route, even from the most westerly forest tracts to the distant market of Cawnpore, will be by the Gogra and Oudh Railway, in preference to the Kunhout and Ganges route; while for all the Oudh stations (from which a large demand for timber may be expected) there can of course be no question whatever but that the Byram Ghât route will be (as it is now) the shortest and cheapest.

37. The progress in conservancy has not, in the Chief Commissioner's opinion, been as marked as it ought to have been. This is partly attributable to Captain Wood's ill-health, and the uncertainty of his position. He is not deficient in zeal, and is gradually acquiring experience. It is to be hoped that he will for the future show more skill in conciliating the various interests with which his operations bring him into contact.

38. The Chief Commissioner was sorry to lose Mr. Adam's services, as that officer had a good knowledge of the people, and was otherwise well qualified for the work.

CONSERVATOR'S REPORT.

Annual Report, dated 3rd August 1868, *on the management and conservancy of the Oudh Forests for the Financial Year* 1867-68, *by* CAPTAIN E. WOOD, *Conservator.*

SECTION I.

INSPECTION OF FORESTS.

1. Mr. F. Read, the Conservator, Oudh Forests, having made over charge to me at Pelebheet on the 20th April 1867, very late in the working season, I was only able to stay a short time in the Terai, and did not proceed to the Sâl forests north of the Sardah, but made arrangements at Kulkhan Ghât, on the Sardah, for the carting of logs out of the forest to the Sohelee.

2. In the commencement of November, however, I proceeded down the Sardah River from Kulkhan Ghât to find a site for the bridge of boats, as during the rains the river had changed its course, forming a large island between the new and old beds. At Diggia Ghât I found a suitable place, and the boats afterwards were fixed there. I then visited the Khyreeghur Forests about Newal Khar and Doodooa Ghât, but owing to the very heavy rains that had fallen during the season, the Forests were unhealthy, and on the low lands it was difficult to travel, even with an elephant. I fixed upon Doodooa Ghât as the centre of operations for the cold weather, as it was situated about the centre of the south-western boundary of the Forests of the 1st Division, and conveniently near Pullia, the post town and the largest village in the neighbourhood from which all supplies were obtained.

3. I then went to Lucknow, passing through the wooded lands south of the Sardah. These lands are mostly grants, and though there is hardly any good timber, there is plenty of fuel, and with proper care they might, in the course of time, be very valuable. I had intended to inspect them minutely in April, but I was prevented doing so by illness. Captain Martin, who at the commencement of the official year was the only Assistant, went on leave about the same time as Mr. Read, and finally left the Department, and was succeeded by Mr. R. M. Adam, who joined in August, and went to Baraich in October. I met Mr. Adam at Baraich, and stayed there some time till the forests could be visited.

4. We commenced work at Bhinga on the 4th December, and travelled up the west side of the Bhinga Forest across to the Rajghur Singha tract, which it is proposed, if possible, to obtain as a fuel reserve,—to the Chardah Forest and then to the south of the Chukkia Forest,—to Moteepore on the east of the Dumarwala Forest, through it to Hurkapore, skirting the Forest, and into the Khyreeghur Division, crossing the Korially at Shitaba Ghât. Mr. Adam returned to the Baraich Division in the beginning of January, and I then skirted the south-west of the Khyreeghur Division and met Captain C. W. Losack (who had been appointed 2nd Assistant Conservator) at Gunga Bihur. On the 12th January we visited the Salookapore Forest, and then went to Doodooa Ghât, where carting operations had commenced, and made arrangements for creeper-cutting and other work.

5. In February I visited the Forests north of Doodooa Ghât, and in March those south of it. Captain Losack inspected the whole of the Khyreeghur Division. Mr. Adam's time was mostly taken up in the Forests west of Bhinga. Owing to the services of Mr. John Kavanagh, Assistant Superintendent of Settlement and Survey, being taken up in settling the boundary line between Oudh and the North-West (District Shahjehanpore), that

officer could not go to the Gonda Division, and as no demarcating work could be done there without him, and the contract for forest produce and grazing was in the hands of the Maharajah of Bulrampore, and there was no felling in the division, and a great deal to be done in the two more important divisions, it was not visited, but should receive its proper share of attention during the present year.

6. As I have mentioned before, the rains were very heavy, and I think particularly so in the Khyreeghur Division; they were also early, and to this I attribute the number of Sâl seedlings that have sprung up. I did not notice this in the Baraich Division.

7. I consider that many of the open spaces or "Phantas," which are now without Sâl trees, would soon be covered with them, as I noticed Sâl seedlings in the long grass beyond the real Forest, and these would doubtless grow, as isolated Sâl trees are found, if it were not for the periodical fires, which destroy the young plants in the burning of the long dry grass. There are low spots where water remains during the rains, and Sâl will not grow on them, but these places are generally of no great extent.

8. In former years any trees that I had seen felled were sound ones, as the woodmen would, when they found that the tree they were cutting was hollow, leave it, as it would not turn out a log that would be passed and paid for. I consequently had no chance of judging of the number of hollow trees; but this year, in running two lines of 100 feet in breadth, about 15 miles in length, for roads and boundaries of blocks, I have been able to obtain some data, at least in the portion of the Forest surveyed, of the number of trees fit for logs which can be obtained out of 100 trees.* But this will be treated of under Section IV, "Yield of Forests."

* Note—about 38.

9. I saw in my inspections the boundary pillars which are being erected. In Khyreeghur they are of masonry, and are placed at the principal points of the boundary between the forests and the village lands. In Baraich they are wooden (Sâl) posts, 9 feet long, of which 3 feet in length is below the ground level, and 3 feet of earth heaped up round the post, leaving 3 feet showing. These are placed in the boundary line at 600 feet or 200 yards apart, according to the Oudh Forest Rules. The work was only started in January, and more progress was made after the close of the official year.

10. In the Baraich Division the village lands are all demarcated (from the Forests) by small earthen mounds about one and a half feet high.

11. The soil is in many places not favorable for brick-making; there is scarcely a burnt brick in any of the villages bordering on the Forests, or even a sun-dried one; the houses of the villagers being of wood and grass or reeds, and the wells either made of hollow trees or of thick Sâl planking; but in the Forests themselves good brick-earth and kunkur for lime can be obtained; if it be considered advisable, these wooden boundary posts can be removed and masonry pillars substituted, but it will be very expensive and take a long time to do.

The Chief Commissioner does not recommend this at present.

12. When the number of pillars required is ascertained, an estimate could be made of the cost of replacing the posts by masonry pillars.

13. I had the wooden posts erected, as it was desirable to get the spots marked, so that they might be brought into the Revenue Survey which is now being made; the posts will last for some years.

14. The Forests in the Baraich Division are not as encumbered with creepers as most of those in the Khyreeghur Division are; I saw some creepers in the Dumarwala Forest, but the whole of this has not been cleared of creepers. Rs. 1,805 was spent in the Baraich Division, but as the returns

of cutting made by Mr. Bonny (a person temporarily employed as Overseer, but whose conduct not being trustworthy, the Chief Commissioner did not confirm in this appointment) were not satisfactory, it will be better to show the progress when the whole is completed next working season.

15. Of the Rs. 1,805 above-mentioned, a thousand was written off to last year's account, therefore only Rs. 805 appear to have been spent in the year under review.

16. The Khyreeghur Division is now cleared of creepers.

I found, on my inspection, as also did Captain Losack on his, that small patches here and there had been left; but this it is very natural should happen, as it is only some time after the creepers have been cut and have died down, that it can be ascertained at a short distance, in thick Forest, what portions have been cut.

The Chief Commissioner saw a good deal of this, and work seems to have been done well.

17. The operations on the whole have, I consider, been satisfactory, as in most places where the creepers have been cut they have been totally destroyed, no shoots springing up from the roots; and in aged plants where they have sprouted, they do not seem to have any strength.

18. The stems of the creepers, though very tough when living, are of a loose texture and decay very soon when cut, from the extreme exposure to dry and wet heat which they have to undergo, and the small branches of the dead creepers soon fall from the upper parts of the trees, and the trees are thus enabled to bring forth leaves for the sustenance of themselves and seed for the reproduction of others.

19. In rich, damp soil, and particularly where the creepers cut were young and vigorous, strong young shoots have come from the lower portions and are making way up the trees. But from what I have seen, I should not say that any large percentage of creepers have thus sprung up. We shall constantly have to be waging war with this creeper before it can be entirely removed from the Forests.

20. I will remark here that the creeper which does so much damage to the Sâl Forest is not, as mentioned in the Secretary's letter No. 1710, dated 3rd November 1867, to the Secretary to the Government of India, Department Public Works, the "*Argyreia Speciosa*," a species of Convolvolus, but the "*Bauhinia Vahlii*," a leguminous plant.

21. Till the Revenue Survey is completed, and the boundary of the Gonda Forests laid down, the exact area of the Government Reserved Forests in Oudh cannot be ascertained; but in Appendix No. I a statement will be found showing the area of the Forests surveyed by Major Anderson, Revenue Surveyor, and a rough approximation of area since added, from which it appears that the Reserved Forest covers about 702 square miles.

22. In the Oudh Forests there are three Divisions, called the—

1st or Khyreeghur Division.
2nd or Baraich Division.
3rd or Gonda Division.

These are artificial divisions for works of management and conservancy, but treating of the forests it will be convenient to name them in these divisions.

23. The land situated at the foot of the Lower Himalayas is covered with Sâl from the banks of the Jumna to Bhootan, forming a belt of forest from 5 to 20 miles in breadth, with scarcely any breaks.

24. Unfortunately for Oudh, after the mutiny of 1857, a large tract of land at the foot of the hills was ceded to the Nepalese Government; this land was that situated at the foot of the hills, and from the soil and climate best

suited for the growth of Sâl; this portion is scantily inhabited, and being at a considerable distance from densely populated villages, has suffered less than the portions near cultivation from grazing and its concomitant evils—jungle fires. Nepal may be said to have all the good Sâl Forest situated between Lucknow and the Himalayas, the British Government only having the ends, which, for many years, have borne the brunt of supplying the large towns of Oudh and the North-West, and of giving grazing to the cattle of villagers to a distance of one hundred miles or more, and of supplying the people in the neighbourhood with fuel, wood for farm and building purposes, and grass for the thatched huts, which are the customary buildings for many miles from the Forests, owing to the soil being so sandy, and its having so little cohesion, that the mud walls cannot support the roof or stand the humid climate of these parts.

25. Sâl grows only on high well-drained land, whereas Sissoo and Khair, the seed of which is often sown by the agency of running water, grows on the low banks thrown up by the river; Huldoo (*Nauclea Cordifolia*), Jamun, Toon, Peepul, Mowah, Burgot, Goolur, &c., &c., occupy the intermediate land.

Khyreeghur.

26. We do not know how far from the foot of the hills Sâl extended in ancient times; but we may conceive that it did extend considerably further than it does now; near Pelebheet (N. W. P.) there are the remnants of what in former times were extensive Sâl Forests, young and stunted trees still covering a large extent of ground, but the trees can never attain maturity owing to there being no conservancy; these stunted Forests follow the south or left bank of the Sardah by Poorunpore and Goonchaee, and enter Oudh near Khoothar on the boundary between Oudh and Shahjehanpore in the North-Western Provinces, the limit being by Hyderabad and Aligunge, and continuing in a line to near the banks of the Sardah in the direction of the village of Khyreeghur; the line of Sâl again running north-east from Khyreeghur to the Mohan River, the boundary between Oudh and Nepal in this Division. On the high bank to the left of the Sohelee, which flows in the old bed of the Sardah, Sâl grows to the very edge; on the right bank of the present Sardah, Sâl trees are washed away by the river in the rains. This bank is about 30 feet above high water mark.

27. All between the banks is low ground; the bed of the Sardah, in fact—the land—is in some places covered with miscellaneous and Khair and Sissoo Forest, long prairie grass, and cultivation.

28. South-east of the line that I described as limiting the Sâl, from the village of Khyreeghur to the Mohan, and as far as the Korially, was formerly miscellaneous Forest, much of which has been cleared; the greater portion of the estate of the Rajah of Khyreeghur is here.

29. Along the low lands of Sohelee are Forests of Sissoo and Khair, which were advertised for sale, but this year have been made over to the Forest Department.

30. The land between the Sardah and Chouka and Korially, from Khyreeghur to Byram Ghât, contains, I believe, no Forest.

Baraich.

31. The Baraich Division commences on the left bank of the Korially. Here we again have the bed of a river, the Korially, dividing the Sâl belt, for there is about as much land east of the Korially between the river and the high land on which Sâl grows, as there is west of it.

32. The Bhurtapore Forest which is contained in the end of an island formed by two branches of the Korially (one of which is called the Girwee) contains little but Sissoo and Semul.

33. There are several Sissoo patches west of Dhurmapore between the present and the old bed of the Korially.

34. The ground between the Girwee and the Dumarwala Sâl Forest contains miscellaneous forest and cultivation. It is in this part of Baraich only that any addition of consequence has been made to the Oudh Forest.

35. The Dumarwala Forest consists almost entirely of Sâl, but from its vicinity to such good water carriage as the Gogra affords, was heavily indented on before it was made over to the Forest Department.

36. The Dumarwala Sâl Forest is, roughly speaking, bounded by the small Surjoo on the east. East of this, and west of the Chukkia Forests, were formerly extensive Dâk and miscellaneous Forests, but these have been sacrificed to cultivation. Most of the Dâk trees are, however, preserved by the villagers for the sale of the lac which is produced on them.

37. The Chukkia Forest is the end of a Forest in Nepal. This also is Sâl, but in some places very inferior.

38. The Charda Sâl Forest is also a continuation of a Nepal Forest. It consists of about 10,000 acres, and has been claimed by the Maharajah of Bulrampore, who had a grant of 10,000 kutcha beegahs, or about 2,000 acres; but I do not think the grant should have been given in a Sâl Forest. The case, however, is before the Chief Commissioner, and I hope that either the grant will be condemned on legal grounds, or that some compensation will be given to the Maharajah to withdraw his claim.

39. To the south of the Forest, and evidently a continuation of it, is a tract of Forest called the Rajghur Singha tract, consisting, for the most part, of scrub and young Sâl and Mowah. It has been proposed to reserve this for fuel, but there are certain claims to it by grantees; it is hoped, however, that it will soon be decided whether this land will or will not revert to Government.

40. The high land south-east of Baraich, and between the Raptee and Gogra, was once covered with Sâl Forest, but these have long since been destroyed, and the land is the property of private individuals. I have marked on the accompanying map the places at which I saw Sâl in any quantity in May 1864.

41. The bed of the Raptee has not the same precipitous banks that the beds of the Korially and Sardah have, but slope gradually, and here Mowah is found in abundance, and so thickly studded are the Mowah trees on the cultivation, for they are preserved for their flowers and fruit, that at a short distance one can hardly believe that the trees are standing on cultivated land, and do not form a portion of the Forest.

42. The Bhinga Forest is composed of Sâl, and a considerable amount of Mowah and other miscellaneous trees.

43. The north-west portion of the Toolseepore Forest is in Baraich and consists of Sâl.

44. The Toolseepore Forest differs from the others that have been mentioned, as it extends from the foot of the hills, but this belt of Forest is much narrower than that to the north-west of it.

Gonda.

45. With the change to a south-easterly direction in the hills, Sâl disappears, and Dhao (*Conocarpus latifolia*) and miscellaneous Forest take its place, but when the hills run east and west, again Sâl re-appears, and the Sâl Forests in the east of Gonda join the Sâl Forests of Goruckpore in the N. W. Provinces. A great deal of rice is grown on the low lands bordering the Toolseepore Forest.

46. During my inspection of the Khyreeghur Forests, I saw the stumps of the trees which I had, in the covering letter to the Report of 1866-67, stated had been felled by a contractor, though Mr. Read had stated that "no logs have been cut during the period under review." The trees had been cut down by the sawyers, who sawed the logs into kurries which are shown in the Report for the year 1866-67, in the "statement of timber removed by purchasers." It is true that there were no new logs brought on Forest Stock, but this practice of allowing contractors to cut trees in the Forest is highly objectionable. The sawyers, who are paid by the amount of sawn timber they turn out, cut down a tree, and if there is a flaw in it, they leave the tree to rot and cut another; again, they generally want to cut kurries of a certain length, so that of a tree that would yield a log 20 feet in length, perhaps only 12 or 15 feet would be utilized.

47. The trees that were cut were living trees, as the stumps and logs had sound bark on; the stumps can be seen at any time in the northern portion of the Salookapoor Forest, mostly to the east of the new road cut from Doodooa Ghât in the direction of Mussan Khum; they will be recognized by being smoothly sawn off at the top, and not cut by axes. To any one inspecting it, it will give a lesson of the waste of contractors allowed to cut on such terms; for, from the number of tops and bottoms rendered almost useless by the centre piece being taken out, and whole straight, but slightly hollow, logs, and sound but slightly crooked logs, that I saw on the ground, I imagine that as much, if not more, timber was wasted as was paid for.

48. This was done when there were hundreds of dead logs lying in the Forest that we are anxious to dispose of; but I have heard the same contractor (whom I refused admittance to the Forests) state that timber sawn from green trees found a better market than that from seasoned logs—it looked prettier, and there was not the same number of cracks and flaws; perhaps not, but in the seasoned timber the purchaser knows exactly what he has, and that it will remain the same for many years to come, whereas in the fresh cut timber he is astonished that such pretty timber should split and sag. In my inspection I did not notice that the logs had suffered much from fire; in some cases the sap wood had been charred on logs that had been several years exposed to jungle fires, but the logs received no real injury. Hollow logs, however, get burnt.

The Chief Commissioner has directed that dead standing trees should be at once felled.

49. Dead and fallen trees, with their bark on, are more hurt by fires, but not so much, in my opinion, as dead standing trees in the same condition.

50. I have not noticed any injury from insects in the logs cut by departmental agency, and which have been barked. The beetle tribe have so many dead trees with decaying bark to attack, that the smooth, hard logs are not visited by them.

51. Captain Losack inspected the places in which the logs were mostly lying, and I endeavoured to cart as many as possible out to the Sohelee Depôts, but we had great difficulty to contend with in the weather. During nearly the whole of the cold weather we had continual showers, which, though slight, rendered the roads difficult for heavy traffic. I arranged, however, to bring to depôts 1,894 logs out of the 5,559 remaining in the Forests, leaving a balance of 3,665; of these, however, 750 have been brought to depôts in the dry months since the close of the official year. The remainder of the logs, 2,915, should, I think, be brought out by the end of June 1869.

52. The logs that were got out this year were inferior in size, but this may be owing to the fact that the carters carted the lightest logs.

53. I would recommend that, for the future, if any Government cut logs are sold in the Forest, the contractor should be bound to take a certain number from a certain spot, and these should be marked for him, otherwise he can pick the timber.

The Chief Commissioner has pointed out that it is for the Conservator to make his own arrangements in this matter of detail.

54. The same contractor who cut the green trees for kurries also obtained 208 logs at 8 annas per cubic foot, deducting the cost of carriage, as will be seen in the Statement of value of timber removed by purchasers in the Report for 1866-67 (page 8); the contents are given, *viz.*, 11,379 cubic feet, which will give an average of 54·7 cubic feet per log; this, in a log 24 feet long, gives a mean girth of between 72 and 73 inches, or in one 22 feet long of nearly 76 inches, which is over our average, and the chances are that the contractor did not take any crooked ones or any with flaws, as he would have had to have done had he taken that number from a depôt. For picked timber Re. 1 or Re. 1-4 has been, and ought still to be, charged.

55. The damage done by fires is very great, and it was truly lamentable to see what the Sissoo tracts about Dhurmapore have come to from fires; burnt standing trees (blackened masses) and trees killed by fire, to become charred in their turn, being in some places as numerous as the living trees. In the Sâl Forest, burnt Sâl trees are seen standing like columns of charcoal 40 and 50 feet high. The trees are gradually killed by the fires, the bark decays and opens out; if the next season's fires happen where such trees are situated, the bark catches fire, and as there is a good draft of air, and perhaps a high wind blowing at the time, the tree must be soon enveloped in a sheet of flame.

56. These are some of the effects of jungle fires, apparent to any person who enters the Forest at any season of the year, but the effects which are not so visible are the more destructive. I cannot do better than quote the 63rd para. of Dr. Brandis's memorandum on the Oudh Forests, dated 23rd June 1863, para. 63.—

"The injury done by fire in these Forests may be defined as follows:—

"1*st.*—It impoverishes the soil by the destruction of the organic matter produced by the Forests, *viz.*, leaves, grass, and brushwood. Only the roots remain to improve the soil. Almost the whole of the ashes is washed away by the first shower of rain.

"2*nd.*—The top shoots of young trees are destroyed, and often young trees are killed down to the root. The dead portion of the stem is then usually surrounded by fresh wood, which, however, does not form an organic connection with the dead part. A cavity is thus formed near the centre of the young stem, and in this the sap from the adjoining tubes and cells collects, and fermentation and decay ensue, which progress upwards, thus giving rise to unsoundness in the heart of the tree.

Or the stem is not burnt to the ground, but the top shoot is killed. The injured part gives rise to unsoundness in the stem, moisture collecting there during the rains. One of the side branches takes the lead, and at this point a knot of small branches is formed, and the shape of the stem becomes irregular. In going through the Forests, we often observed on young trees a large number of these knots, indicating how often they had been burnt.

"3*rd.*—The fires scorch leaves and young branches, and thereby impede the growth of the tree.

"4*th.*—Fires deprive the ground of its covering stratum of leaves, &c., which retains the rain, causes it to filter into the ground, and generally keeps the ground moist. On hills and undulating ground especially, the absence of this covering stratum causes excessive drought, the rain running off the ground as soon as it falls, and in addition washing away a large portion of the surface soil, when this is not protected by a matting of grass."

In my inspections I have noticed all these evils, and the Forest Surveys, which have been very accurately made, and which show over 60 per cent. of unsound trees among the 1st class trees, confirm, in my opinion, the truth of the Inspector General's remarks.

SECTION II.—RESERVES.

Reserved Forests.

57. In Oudh the whole of the Forests in charge of the Conservator are supposed to be reserved, but, as stated in Orders of the Government of India, No. 38F, dated 22nd January 1868, para. 3, this term (reserved) hardly appears applicable, so long as the inhabitants of villages in and within 3 miles of the Forests may cut as much timber, not of the reserved kinds, as they like for domestic and farming purposes.

58. I trust the Chief Commissioner will excuse me for speaking my mind on this subject; but it is one of the greatest importance and very difficult to handle, for the views of the District officers and the officers of the Forest Department are antagonistic.

59. There can be no Forest Conservancy as long as the villagers are allowed into the Forests when they please, and so long as there is grazing.

60. I acknowledge that the inhabitants of the villages in and adjoining the Government Forests must be supplied from the Forests with grass and timber for their farm and household purposes; but, as I explained in my letter No. 50 of the 13th January 1868, I do not think that the Forest Department should give away valuable produce, that the land revenue may be increased; at all events, as long as the rule of free fuel remains in force, I think that the land revenue should credit the Forest Department with a certain sum, say, 25,000 Rupees yearly, till the value of the latter be ascertained.

61. This, however, is a mere money matter, and does not seriously affect the welfare of the Forests.

Fuel Allotments.

62. The great question is, how are the villagers to be supplied with these products, which are almost necessary to their existence, with the least damage to the Forests?

63. With this view, the then Chief Commissioner drew up a set of rules relative to special Fuel allotments to villages bordering on the Oudh Forests, a copy of which is given below:—

Rules.

I.—Fuel allotments to be apportioned off by the Forest Department, for the use of the cultivators residing in such villages where the boundaries are in contact with reserved Forests, and where no wood for fuel is otherwise procurable. Isolated tracts to be allotted where possible.

II.—The extent of allotment to be determined by the Conservator of Forests, in conjunction with the Deputy Commissioner of the District. The boundaries of the allotment thus determined to be marked out by the Assistant Superintendent of Settlement.

III.—The allotment, when determined and marked off, to be at the disposal of the village, with all it may contain. It shall be, however, competent to the Conservator to reserve valuable timber within the allotment as the property of Government, and in this case the village to which the allotment is made will be held responsible for the preservation of the reserved timber.

IV.—Any portion of the fuel allotment brought under cultivation will be forfeited, and will revert to Government.

V.—No charge or fee to be levied under these rules by the Forest Department.

64. These rules were to be put in force experimentally for one year. But, as I urged in my letter No. 53 of 13th January 1868, there were many difficulties.

1st.—What area of wooded land would be considered due to villages? This would greatly depend on the population of the village, and the timber growth on the land to be made over as a fuel allotment.

2nd.—That in some places the cultivated land adjoined the pure Sâl Forest, and that I should never recommend that any of the Sâl Forest should be made over for fuel.

3rd.—That at present the villagers within three miles of the Forest were, in addition to the fuel and wood allowed by Forest rules, also allowed their grass for thatching free, and that they accordingly would still be allowed access to the Forests, although fuel allotments were made, for the grass they require would not probably be on the ground given over to them for fuel.

4th.—The villages are differently situated, and may be divided into four classes, *viz.*—

I.—Those that adjoin pure Sâl Forests and have no timber on them.

II.—Those that are similarly situated and have timber.

III.—Those that adjoin mixed Forests and have no timber on them.

IV.—Those similarly situated and that have timber.

Thus in the first there is difficulty of giving up Sâl Forest; in the second the timber is situated in the fields or lands marked off for certain individuals, and does not belong to the community at large; and even if all the timber was in one place, the land on which it was could not be brought under cultivation; for the 3rd class, fuel allotments are the most suitable, and I am of opinion that they are the least numerous; the difficulties of the 2nd class apply also to those of the 4th. I represented also that the work of determining fuel allotments would take up a considerable time, and that the services of Mr. Kavanagh, the Superintendent of Survey, who, according to the rules, was to mark off the allotment determined by the Deputy Commissioner of the District and an officer of the Forest Department, were not available.

65. In March, the Chief Commissioner himself paid a visit to the Forests, and on my representation allowed the marking of fuel allotments to stand over.

66. I do not think it feasible to give fuel allotments to all the villages in and adjoining the Forests, and I have recommended that, instead of the fuel allotments being made, the inhabitants of such villages should be allowed to take the Forest produce, from certain tracts appointed by the Forest officers, and under certain restrictions, which I consider essential to the welfare of the Forests, *viz.*, that the Forests should be closed to them from the 15th February to the setting in of the rains, in order to stop fires as much as possible, and that they should be restricted to head of banghy loads, except from the 1st January to 15th February, when they might be allowed to use carts for storing up thatching grass and fuel, &c., for the closed time.

67. The Chief Commissioner does not approve of the scheme at present.

68. There is another very difficult subject, *viz.*, Grazing. For very many years the Oudh Forests and those of Nepal have been the grazing grounds of thousands of cattle, which come to the Forests when grass and other fodder are scarce in more cultivated districts, and the inhabitants of the villages near the Forest possess large flocks and herds.

69. The Forest Department is desirous of stopping grazing, as fires are an almost necessary consequence. If the grazing is to be stopped, what is to become of the cattle?

70. When I state that in the very best portions of the Oudh Forests over 60 per cent. of the trees are rendered useless for logs from fires and creepers, I trust that the Chief Commissioner will see the tremendous loss that is caused to the Forests. Our future Forest Surveys will give us a better insight into the amount of destruction caused by fires, and I am afraid that in Baraich and Gonda a heavier percentage of unsound trees will be found.

Fuel Reserves.

71. I have reported on the subject of resumption of tracts for fuel, *viz.*, the lands south of the Sardah in the Kheree District, and that known as the Rajghur Singha tract in the Baraich District, in letter No. 30 of the 4th July 1868. None of these lands have as yet been made over to the Forest Department.

SECTION III.

Plantations.

72. Hardly any work has been done in planting, and till fires are stopped, I hardly think it advisable to attempt anything, as, if the plantations are not guarded and cleared, which would cost a great deal, they would be liable to be totally destroyed by fire.

SECTION IV.

Yield of Forests.

73. In Section VI will be seen my reasons for advocating that good broad spaces should be cleared through the Forests, and also, that obtaining the means of getting accurate Forest Surveys was among them. In making linear Forest Surveys, particularly when there is thick under-growth, and side distances or off-sets are difficult to be taken, the Surveyor has to judge by the eye, and it requires a great deal of practice to obtain anything like exact results; but even a Survey made by an inexperienced person, but in which care has been taken, will afford valuable data where all before was unknown or only guessed at.

74. The Forest Surveys were this year made under the most favorable circumstances, as there was a line of clearance nearly 15 miles in length, with a measured breadth, *viz.*, one hundred feet, the whole way. The branches and small trees had been put aside, the long grass cleared, and the fresh stumps could easily be distinguished and counted. In the Surveys, the word "Phanta" will be often seen; this is the local name for the grass-covered plains in the Forest which have no trees on them. In Major Anderson's Survey, these small phantas are not taken notice of, and are counted as Sâl Forest; consequently in a Survey they must be taken in the average, and have been so, but in crossing the large phantas, which have been noted as such in Major Anderson's Survey, only the portion of real Forest has been taken, as will be seen in Survey No. 16 (*not printed*).

75. The separate Surveys, almost all of which are each a mile in length, will be found in the Appendix (*not printed*) with an abstract of Surveys (Appendix No. II.)

76. The spaces measured were one hundred feet in length; to make the counting as accurate as possible for this purpose, four coolies carried two ropes, each 100 feet in length, joined in the shape of the letter T, with the top part of the letter progressing in the direction of the line to be surveyed. The stumps were then counted, and the coolie at the foot of the letter took up the position of the one at the junction; the three coolies in the line progressing the length of the rope, *viz.*, 100 feet, a new space 100′ × 100′ was thus marked off, and the counting again commenced.

77. The classes were also marked; this was done by having sticks two feet in length* notched at every six inches; trees over two feet diameter were counted as 1st class; over 1½ feet as 2nd class; over 1 foot as 3rd class; over 6 inches as 4th class. The breadth of the stump of the felled tree was at once ascertained by the stick being placed on the top, as also the class to which it belonged.

78. The first Surveys from Doodooa Ghât were made by Captain Losack and myself, and after I saw that Captain Losack could work alone, and the native officials understood the work, I left the work to him, which he did with great care. The number of logs were counted, and their numbers will be found in each Forest Survey.

79. The abstract shows that there are, per acre,—

	1st Class.	2nd Class.	3rd Class.	4th Class.
Sâl trees	2·9	3·5	·8	19·0
Arseyna	0·7	1·2	4·8	7·2
Miscellaneous	0·2	0·4	3·5	18·3
TOTAL	3·8	5·1	18 1	44·5

80. This growth appears good, but I think it will hereafter be profitable to thin out many of the 3rd and 4th classes. This will have to be done by Forest servants, as if the villagers were allowed to cut, they would take the straight poles which we should leave to become 1st class trees.

81. Dr. Brandis in 1863 made a Survey in the Oudh Forests, and from his data he found (para. 6 of his memo. on the Oudh Forests) that there were 3·3 1st class trees per acre; but he does not state whether he counted Sâl trees only. My results show 2·9 1st class Sâl trees per acre, but I think it better to retain Dr. Brandis's figures, as part of this year's Survey went through portions where felling has taken place within the last seven years, and all the old stumps were not included. I referred in Section 1, para. 4, to the number of logs which we obtained from the 1st class trees felled; they numbered 201 in 524, or 38 per cent. Some trees give two logs, and I think I may safely say that two-thirds of the 1st class trees in the Khyreeghur Forests are not fitted for logs. In this I am borne out by Mr. Read's working of the Newal Khar tract.

82. Both Dr. Brandis's and my data give about 3·3 1st class trees per acre, and Mr. Read's practical working, in what he considers an average tract, gives 1·1 logs per acre, or one log for every three 1st class Sâl trees. He states in the 2nd para. under heading "Conservancy," in his Report for 1862-63, "All trees (except those that were considered necessary as parent or seed trees) above 60 inches girth have been removed from this compartment. It will therefore be exempt from further contribution till the whole of the remaining tracts have been worked. This tract comprises 1,040 acres, and the yield of logs above 60 inches in girth has been 1·160, or 1·11 trees per acre. This compartment, I consider, contained a fair average of timber, as compared with the generality of tracts, and the percentage per acre may be of use (as it is a practical result) to us in making our approximate valuation of the timber now standing in the Oudh Forests."

* In future Surveys the sticks might be made a little longer than 2 feet, to allow for the difference of girth of the tree at the height it is generally felled from the ground (2 to 3 feet), and 6 feet the recognized standard height at which trees are measured.

As I have before stated, the woodmen would only fell trees fitted for logs, and would leave the hollow and crooked ones, which would be of use for shade and seed.

83. The concentric rings are very difficult to count, and a number of ends should be sawn off the logs and be planed and polished, in order to facilitate the counting of the rings. I inspected a good many logs (cross-sections) and found, on looking very minutely, that there is a very thin whitish-yellow line (formed probably by the rāl or resin at a certain period of the year) which I consider limits each year's growth, and it appears to me that there are on an average eight such rings to an inch.

84. Working from this data, I will calculate the age of a 2nd and 1st class tree, in order to calculate the time that a 2nd class tree of minimum size ($4\frac{1}{2}'$ girth) would take to grow to a 1st class tree of the minimum size ($6'$ girth), and compare this result with the growth ascertained by measurement of trees of known age as given in Dr. Brandis's memorandum on the Oudh Forests.

A 1st class tree, of 6 feet girth, at 6 feet from the ground. Girth = 72 inches, radius = $11\frac{10}{22}$ inches; deducting the $\frac{10}{22}$ inch for bark, gives 11 inches, which multiplied by 8 gives the age of the tree 88 years. A 2nd class tree, at $4\frac{1}{2}$ feet girth, at 6 feet from the ground. Girth = 54 inches; radius = $8\frac{13}{22}$ inches; deducting $\frac{10}{22}$ inch for bark, as before, gives $8\frac{3}{22}$ inches, say $8\frac{1}{8}$ inches, which multiplied by 8 gives the age of the tree 65 years.

The time, according to this data, necessary for a 2nd class tree to become a 1st class would be 88—65 = 23 years; but the concentric rings are narrower at the edge than those near the centre; allowing $\frac{1}{10}$th of an inch increase in the radius per annum, after the tree has arrived at 2nd class size, it would only take 33 years to attain to 1st class. As Dr. Brandis states, we must not take the average from garden trees, which have everything in their favor, nor from the slow growth of hill trees. His average of 20 trees in the Kosilla valley, Kumaon, elevation 1,500 feet above the sea, is 50 years of age, and with a girth of 3 feet; girth = 36 inches; radius = $5\frac{8}{11}$ inches; deduct for bark $\frac{1}{2}$ inch, leaves $5\frac{5}{22}$ inches, which gives 9·6 rings or years to one inch. His average of two trees measured in the Kotree Doon Forests, Gurhwal, 2,500 feet above the level of the sea, was 162 years of age, and 8′ 2″ girth; girth = 98 inches; radius = $15\frac{13}{22}$ inches; deduct for bark $\frac{1}{2}$ inch, leaves $15\frac{1}{11}$ inches, which gives 10·6 rings or years to one inch. These are the average of trees from 1,500 to 2,500 feet above the level of the sea, and therefore I cannot think that, giving $\frac{1}{10}$th of an inch increase in the radius yearly, too much in the Oudh Forests, and this gives 33 years for a minimum 2nd class tree to become a minimum 1st class, and consequently that we can work safely with taking 30 years as the time between the 1st and 2nd class, and consequently of the rotation of felling.

The Chief Commissioner remarks, that all the above calculations serve to show that those made by Dr. Brandis five years ago are trustworthy.

85. I think, therefore, that we may cut 4,000 trees annually in the Khyreeghur Forests, and that we shall be on the safe side in so doing, as the figures below will show. Sâl bearing land in the Khyreeghur Division is about 150 square miles, which, at 3·3 1st class trees per acre, or 2,205 per square mile, gives 3,30,750 1st class trees in the Khyreeghur Forests. Dividing this by 30 years, gives 11,025 1st class trees, of which, leaving the unsound ones for shade and seed, one-third, or 3,675, are available for logs; but in the last 7 years we have only felled about 12,000 trees, so that we may add $\frac{3,675 \times 7 - 12,000}{23} = 696$ to the 3,675 = 4,000 odd for the next 23 years.

86. We have not yet ascertained the average number of Sâl trees per acre in the Baraich and Gonda Divisions, but the whole of the Sâl Forest in Oudh covers 425 square miles, and if the average is anything like that in

the Khyreeghur Division, we should have 425 × 2,205 = 9,37,125 1st class trees, say one-third good = 3,12,375; on the rotation of 30 years, 10,412·5 per annum; but I am afraid the Forests of the 2nd and 3rd Divisions are not so valuable as those of the 1st; if we allow 4,000 logs per annum for the 150 square miles in Khyreeghur, and 4,000 for the 275 square miles in the other divisions, we should, I think, be on the safe side, as this gives only about half the number of trees per acre for the poorer divisions.

87. We are doing our best to destroy the creepers, one of the evils; the next thing will be to stop grazing and fires; if this can be done, over 24,000 logs will hereafter be available per annum; for not only will trees grow straight and sound, but, being healthy, and the soil richer, the growth will be more rapid. The Forests will be worth three times what they now are; we obtain about Rs. 20,000 annually for grazing, and will hereafter lose, I am of opinion, fully Rs. 4,00,000 annually from the destruction of timber.

SECTION V.

Financial Results.

88. In para. 7 of letter No. 2564, from the Secretary to the Chief Commissioner, dated 11th February 1868, the Officiating Conservator is desired, if possible, to explain the discrepancies referred to in para. 22,—Orders of the Government of India, No. 38F, dated 22nd January 1868.

89. In forwarding the Forest Report for the year 1866-67, in covering letter No. 13, dated 14th July 1867, to the Secretary to Chief Commissioner, in Department of Public Works, I explained the discrepancies referred to, and give below an extract of the letter which was not forwarded on with the Report.

"*No. V.—Financial results to end of* 1866-67.

"Mr. Read, in his Report for 1865-66, has, under the same heading, not given the correct results for the years 1862-63 and 1864-65. On reference to my Report for 1863-64, it will be seen that he has entered the results up to the end of 1862-63 as the 'results of 1862-63.' Again, what must be termed the year 1864-65, was only a broken period of seven months, *viz.*, from the end of the Forest year 1863-64, (30th September 1864) to the commencement of the financial year 1865-66 (1st May 1865). I have obtained the results for the period from the accounts in this office, and I have in the present Report made the necessary corrections, and I trust that the results of the five and a half years will be found both correct and satisfactory."

90. The first Reports made by this Department were for the Forest year, 1st October to 30th September, and orders afterwards were received for the Reports to be sent in for the financial year. Mr. Read gave figures for an entire year of 12 months, whereas he should have only given those for the broken period. On comparing Mr. Read's Report with mine, I trust the Chief Commissioner will now see that my figures were correct, and that, had my remarks on the forwarding letter been noticed, the present explanation would have been unnecessary.

91. In para. 20 of No. 38F, before referred to, reference is made to the figures in the Report being at variance with the figures in Form 28. This is accounted for by the Accountant General altering the figures in Form 22 and not making the same alterations in Form 28. In this Report the figures of the Accountant General are taken, so that there can be no mistake.

92. The receipts for the year have not been large, comparatively little having been received under heading I,—"Sale of timber brought to depôts by Government Agency,"—owing to the extensive sales which took place the year before, and there having been only about 400 logs brought to depôts by Government agency during the same period, the stock was so reduced

that the value of it at the commencement of the year under review was only Rs. 8,661-9-8, whereas at the end it was Rs. 64,586-9-6, after realizing Rs. 21,816-12-7.

93. Of the expenditure "A," Rs. 50,000 may be said to have been spent on working, and Rs. 20,000 in conservancy, or on works that do not pay during the year.

94. The progress under the head "Working" has been as follows: 1,894 logs and 448 sleepers were brought from the Forests to depôts; 739 logs were sent from Forest depôts to the Sardah; over 1,000 logs were delivered at Cawnpore, and the stock generally got nearer the market, as will be seen in comparing the particulars at the commencement and end of the year in the Annual Timber Account, Form 25. Owing to the very heavy rain that fell early in June, before it was expected, the bridge of boats gave way, and several boats sunk, all of which have been recovered but two, which are now in the sand. This accident, and having to remove the bridge further down stream, (the left bank of the river last year having become the right bank of a large island, the main stream having changed its course,) occasioned heavy expenditure.

95. In works of improvement and conservancy, creepers were cleared from 36,770 acres in the 1st Division, and in the 2nd Division little remains to be done; 148 masonry boundary pillars were erected in the 1st Division, and materials made for others and carried to the sites; 1,130 boundary posts were fixed in the 2nd Division. Two lines from Doodooa Ghât, of a total length of about 15 miles, by 100 feet broad, were cleared. Wells built at Newal Khar and Doodooa Ghât, and materials (bricks and lime) prepared for the work of next season.

96. The area of creepers cut in the 1st Division up to the commencement of the year was—

Acres	58,923	1	0	@ a cost of Rs	10,365	7	8
This year were cleared ...	36,770	3	0	„ „ „	4,247	6	6
Which gives a total of acres ..	95,693	4	0	„ „ Rs.	14,612	14	2

or a cost of 2 annas 5·3 per acre.

97. In the report for 1866-67, in the Statement "List of tracts cleared of creepers in 1866-67," under the heading "Remarks," should have been "west of Bhugora Tâl," not "1st Division." I regret that this error has occurred, as it may have misled the Government of India (para. 7 of 38F). The figures below will give a better idea of area and progress—

	Acres Sâl.		Expended.			
1st Division	95,268	Rs.	14,612	14	2	All cleared.
2nd „	112,527	„	1,805	0	0	Most cleared.
3rd „	64,130	„	7	14	6	Nil.
Acres ...	2,71,925	Rs.	16,425	12	8	

or 425 square miles.

98. The actual receipts for the year were Rs. 66,452-15-6, and the expenditure Rs. 93,633-8-6, showing a deficit of Rs. 27,180-9-0; but the difference in the value of assets at the commencement and close of the year was Rs. 53,699-8-9 in favor of the year, giving a net revenue of Rs. 26,518-15-9.

99. The financial result up to the end of 1866-67 was a surplus of	Rs.	1,95,793	8	11
Adding net revenue of the year	„	26,518	15	9
Gives a surplus for the six and a half years' working of	Rs.	2,22,312	8	8

100. This surplus is actual Cash or Stock in hand; but, as I have mentioned before, I think the Forest Department should be credited with a certain amount yearly from the land revenue for the timber, fuel, grass, &c., that are supplied without payment to villagers living on a tract of country of from five to seven hundred square miles in extent.

The Chief Commissioner observes that this would be only making paper accounts.

101. Very little has been refunded by contractors, and I think it almost impossible to recover the money, but I will write more fully on the subject for the information of the Chief Commissioner.

SECTION VI.

General Remarks.

102. In para. 6 of letter No. 2564, from Secretary to Chief Commissioner, Oudh, Department Public Works, it is stated—"In the Progress Report of current year's operations, the questions of the best localities for depôts, and the routes for exporting timber, as now suiting the present circumstances of the department, should be fully considered (with reference to paras. 15 to 18 of the Circular under review")—Orders of Government of India, No. 18F, dated 22nd January 1868.

103. In my letter No. 82, of February 24th 1868, to Secretary to Chief Commissioner, Oudh, Department Public Works, I reported on the subject, and herewith give a copy—

"I have the honor herewith to forward a map of the province of Oudh, showing the position of the Oudh Forests, and the different routes of land and water carriage, as also a map of the 1st Division of the Oudh Forests.

"2. The felling operations have been hitherto in the northern half of the Forest, situated from A to D, and in future years we shall work toward A C, the portion above A C being about half the Forest. The timber was taken from about D, *viâ* Mujra, to Guttia Ghât, where a depôt was formed, and afterwards to Kulkhan Ghât, which last year had to be abandoned, owing to the Sardah changing its course, and cutting away half the village of Chundea.

"3. Owing to the great expense which has occurred in repairing the damage done to the bridge of boats in the last rainy season, and the moving of the bridge to Diggia Ghât, and the payment of nearly two years' compensation, and the expenses connected with the demarcation of the Forest, and the expense connected with the repairs of existing roads, very little, if any, of the grant will remain unexpended at the close of the financial year.

"4. The detailed statement below will show the actual cost of carriage of timber by different routes. I have taken the cost of a log of 60 inches mean girth.

"*To Cawnpore viâ Kooean Ghât on the Kunhout.*

		Rs.	A.	P.		
Forests to Sardah	... ...	7	0	0	Land	Rates in force.
Sardah to Kunhout	... ...	7	0	0		
Kunhout to Shahjehanpore	... ...	1	4	0	Water	
Shahjehanpore to Cawnpore	... ..	4	0	0		
Landing charges	. ...	0	12	0		
	Rs. ...	20	0	0		

" No. 2.—To Cawnpore viâ Bareilly.

	Rs.	A.	P.		
Forests to Sardah	7	0	0	Land	Rates in force.
Sardah to Bareilly	13	0	0		
Bareilly to Cawnpore	7	0	0	Water	
Landing charges	0	12	0		
Rs. ...	27	12	0		

" No. 3.—To Cawnpore viâ Byram Ghât and Sohelee.

	Rs.	A.	P.		
Forests to Depôts on Sohelee ...	*3	8	0	Land	†Probable rate.
Depôts to Shitaba Ghât	†2	0	0	Water	...*Rates in force.
Shitaba Ghât to Byram Ghât ...	*4	8	0		
Landing charges	*0	12	0		
Byram Ghât to Cawnpore	†14	0	0		
Rs. ...	24	12	0		

" No. 4.—To Cawnpore viâ Byram Ghât, Sohelee, and Railway.

	Rs.	A.	P.		
Forests to Depôt on Sohelee ...	3	8	0	Land	
Depôt to Shitaba Ghât	*2	0	0	Water	*Probable rate.
Shitaba Ghât to Byram Ghât ...	†4	8	0		†Rates in force.
Landing charges	†0	12	0		
Byram Ghât to Cawnpore	*5	4	0	Rail	
Rs. ...	16	0	0		

" No. 5.—To Cawnpore viâ Sardah and Byram Ghât.

	Rs.	A.	P.		
Forests to Sardah	*7	0	0	Land ...	*Probable rate.
Sardah to Byram Ghât	†6	8	0	Water ...	†Rates in force.
Landing charges	†0	12	0		
Byram Ghât to Cawnpore	14	0	0	Land	
Rs. ...	28	4	0		

" No 6.—Forests to Fyzabad viâ Sardah.

	Rs.	A.	P.		
Forests to Sardah	7	0	0	Land	Rates in force.
Sardah to Fyzabad	8	11	0	Water	
Rs. ...	15	11	0		

" 5. From these figures it will be seen that at present the Kunhout route No. 1 is the cheapest, and the Sohelee route No. 3 the next; but that when the Railway runs to Cawnpore from Byram Ghât, route No. 4 will be cheaper than the Kunhout route. But it must be borne in mind that the heavier the logs are, the greater is the price of land carriage (carts) per cubic foot; whereas by water the cubic contents of the whole of the log signify little. This I showed fully in Statement D, page 21 of my Report for the year ending 30th September 1864, from which it will be seen that logs of 60 inches mean girth cost for land carriage annas 2-7 pie per cubic foot, and those of 100 inches annas 4-7 pie per cubic foot; the cost of sawn timber (as sleepers) being only annas 1-7 pie per cubic foot.

" 6. The Sardah route No. 5 is expensive, as it entails land carriage to the Sardah, and the river is full of sand banks till it meets the Korially at Khyree Ghât. The new canal would also diminish the volume of water considerably.

"7. I would recommend two routes being determined upon, the Kunhout and the Sohelee, as by the latter route we should lessen the land carriage in these parts, which is one of our great difficulties. We can get plenty of people to cart from the Forests to the Sohelee Depôts, as the bullocks get plenty of grass free; whereas from the Sohelee to the Kunhout the cartmen have to pay for fodder for their cattle.

"8. The Sohelee in the rainy season has abundance of water, and rafting can take place from July till the end of October to Shitaba Ghât, where there is a good place for a depôt; rafting can take place from Shitaba Ghât down the Korially from the end of October (when the volume of water has decreased after the rains) till the middle or end of June, so that rafting operations could take place all the year round. The river is full of snags from Doodooa Ghât to Khyreeghur, but these could be taken out in April and May, when there is little more than a foot of water in the Sohelee; from Khyreeghur to Shitaba Ghât it is pretty clear.

"9. When writing before about the Kunhout route, I advocated a route *viâ* Bhira, but as Pullia is now in Oudh, I would recommend the route *viâ* Maroucha Ghât, and that after next rainy season the bridge should be brought from Diggia to Maroucha, and there be retained.

"10. There are no difficulties from Doodooa Ghât to Maroucha Ghât; I have lately driven between the places in a dog-cart, and Captain Losack is now examining the country between Maroucha Ghât and Kooria Ghât. I imagine the Goomtee is the only difficulty, and this might easily be remedied by making a corduroy road across its bed. Should it be thought necessary, a broad unmetalled road might be marked out between Maroucha Ghât and Kooria Ghât, and Maroucha Ghât and Doodooa Ghât, and the land taken up on the Government service, as the villagers are accustomed to plough up the old tracks, and the carters have to make a new route for themselves. Should the Chief Commissioner desire it, a line from Kooria Ghât to Doodooa Ghât might be marked out and surveyed, and a report on the route forwarded during the next three weeks.

"11. I am now clearing a line 100 feet broad from A to C and from A to D, and propose doing the same from A to B and running out branch lines afterwards of 50 feet width, so as to divide the Forest into 30 blocks of almost equal size. The advantages of doing this are as follow:—

"I.—We shall have the best of general Forest Surveys, for all the trees cut on the line will be counted, and from this we shall have a pretty good idea of the general contents of the Forests.

"II.—By dividing the Forest into blocks we shall, knowing the exact area from future Forest Surveys, know the contents of each particular block, and check the data obtained by the last method.

"III.—The officer in charge of the division will be able to visit any spot in the Forest in a very short time.

"IV.—Certain blocks can be told off to certain watchers.

"V.—Plans can be prepared for future felling operations after the blocks are examined.

"VI.—Wells can be dug at particular junctions, thus considerably cheapening the work, and making life in the Forest much safer, as at present the working parties, owing to the want of water in the interior of the Forests, have to live on the edge of the Newra, Sohelee, and Mohan, and the water in those streams after March is poisoned by the leaves falling into them. The wells in the Tharoo villages are hardly sufficient for the wants of the villagers, as with the small demand on them they run dry in the warm weather towards evening. The Forest wells would be dug deep, with wooden sides, and not be mere hollow trees sunk in the ground as in the Tharoo villages.

"VII.—Timber now which cannot be got out, could be when roads are made passable to the centre of the Forests.

"12. After the lines are cleared, I would recommend that a path 15 feet broad should be cleared in the centre of stumps, and the tracts made otherwise passable for timber carts."

104. In reply, the Chief Commissioner gives his instructions in letter No. 2913 of the 25th March 1868 of his Secretary in the Department of Public Works, a copy of which is now given.

"(1). Acknowledges receipt of Conservator's letter No. 82, dated 24th ultimo, in which he has discussed the export routes from the Forest, and has shown that the cheapest is *viâ* Kooria Ghât and the Kunhout, and Ganges to Cawnpore; and the route *viâ* the Sohelee and Byram Ghât to Cawnpore, though rather more expensive than the former one, will be the cheapest when the railway is opened to Byram Ghât.

"(2). The Chief Commissioner concurs in considering that these two routes are decidedly the best; and it may be remarked that even now the Sohelee route has many advantages, for, if it be remembered that Cawnpore is not the only mart, but that Fyzabad and Lucknow are important sources of demand, it will be seen that a large and important trade exists which requires the Sohelee route, and for which the Kunhout route is useless. Again, the progress of felling tends yearly eastward, *i. e.*, away from the Kunhout and towards Byram Ghât, and, as pointed out by Conservator, the facilities for procuring bullocks and carts for the eastward far exceed those of the westward route.

"(3). Conservator is accordingly now directed to arrange for organizing export by the Sohelee and Byram Ghât, as well as by the Kunhout route. The Sohelee should be cleared of snags when the water is at the lowest, and depôts on its banks, in the Forests, and at Shitaba Ghât should be established.

"(4). The bridge should eventually be brought down to Maroucha Ghât for next season's work, and a report furnished of the route thence to Kooria Ghât. In regard to this the district officers should be consulted, so that, if possible, the District Local Funds' Works and the Forest Roads may mutually benefit one another.

"(5). The three main roads radiating from Doodooa Ghât through the Forests, with the lesser roads at right angles to these, as proposed by Conservator, are sanctioned. They will serve both to open up the Forests, and to aid in forming accurate Surveys of the Forest yield.

"(6). The proposal also to sink wells at the points of junction is approved, and the work is sanctioned.

"(7). The work should be set in hand, and after experience has been gained, a more accurate plan of the roads, with an estimate of the cost, should be submitted, that the extent of work which can be carried out in one season may be known.

"(8). The Chief Commissioner would impress on Captain Wood the necessity for acting promptly and vigorously in all these arrangements."

105. In para. 11 of my letter I should have stated that one of the many advantages to be gained by having the main line of road and branches, was the stoppage of jungle fires, for they do not often cross a broad road.

106. When the Forest Department first established depôts on the Sardah, it was with great difficulty that the timber was sold; many timber merchants not being aware of the existence of the depôts, and others not being able to keep their money idle for a long time, for though the Kunhout

route to Cawnpore is comparatively cheap, it takes a long time to get the timber down. There is first the land carriage to the Kunhout, the rafting to Shahjehanpore, where there is, except in the rains, a bar, the dropping the logs there, taking them by small boats to Mohara (where the river joins the Ganges), and again rafting them by large boats, after the rains, down the Ganges.

107. There is great demand for timber now at Byram Ghât, and Sâl that at the time that Dr. Brandis wrote was sold at from 8 annas to 10 annas per cubic foot, is now sold at Re. 1 to Re. 1-4 or more per cubic foot—a rise of 100 per cent.* I attribute this rise not only to the knowledge that the Nepalese have now of the value of timber, but extensive fellings having taken place, they have probably felled the most accessible timber, and the cost of carriage to the river must be greater. I have shown that, when the railway is opened, the advantage of the Kunhout route to Cawnpore will be done away with.

108. Oudh Forest timber is now readily sold; this year I sent 1,200 logs to the Executive Engineer of Fyzabad, and have an indent from the Public Works Department for nearly 2,000 at Byram Ghât, and doubtless will have more indents when the timber is available.

109. With the Forests in the backward state they are in, Forest Officers should devote as much of their time as possible to works of conservancy and true Forest work; whereas up to the present, a great part of the work has consisted in arranging for the carriage (and payment of it entailing numerous and lengthy accounts) of timber from the Forests to many depôts.

The Chief Commissioner agrees that this is the course to pursue.

110. I am of opinion that the depôts should be established on the banks of the Sohelee, and that for the present we should raft to Byram Ghât, and gradually, as purchasers will give a good price at the Sohelee depôts, withdraw from being timber carriers.

111. We should always have to cart from the Forest to the Sohelee, but these depôts would be under the eye of the Assistant in charge, whereas at present the depôts are distributed over the country.

The Chief Commissioner considers that next year the Kunhout route should be given up, and the Byram Ghât alone retained.

112. The timber from the Baraich Forests, when they are worked, will be sent down the Gogra. When the railway goes from Byram Ghât, timber will easily be carried as far as Bareilly, and compete with the timber from the Kumaon Forests.

113. In obedience to the Chief Commissioner's instructions, arrangements have been made for conveyance of timber both by the Kunhout and Sohelee routes. The Sohelee has been cleared of snags, and boatmen have been arranged with for rafting from the Sohelee depôts to Byram Ghât. The bridge of boats will be put up in November at or near Maroucha Ghât.

114. I have consulted with Mr. Glynn, the Deputy Commissioner of Kheree, and he is of opinion that a road from outside the Forests at Doodooa Ghât to Maroucha and on to Bhira should be marked out by the District authorities. There is a road either made or in progress from Bhira to near Khootar, and a bridge will be made by the local authorities on the Kutna Nuddee. From Shahjehanpore to Powayan the Shahjehanpore authorities are making a metalled road, and I believe mean to continue it on to Khootar, so that the Forest Department need not make any road out of the Forests.

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* Dr. Brandis remarks, in para. 45 of his memorandum of June 1863, that Sâl inferior to that of the Oudh Forest is reported to command one rupee per cubic foot at Kasheepore, North-Western Provinces. During the last cold weather the Executive Engineer of Bareilly had to pay Re. 1-12 per cubic foot for common logs, and Rs. 2 for those selected at a depôt of Colonel Ramsay's near the same place.

115. Direct lines from Maroucha Ghât to Kooria Ghât and Powayan are equi-distant, but the cost of carting even to Shahjehanpore on a good road, nearly half of it metalled, should not be more than by village roads to Kooria Ghât. It might be advisable next cold season to find out the capabilities of the Goomtee for floating timber to Lucknow from the point where the road intersects it.

116. Mr. Glynn is of the same opinion as myself, that, with a good road through the Forests, a bridge of boats at the Sardah, and a good road on to Shahjehanpore, the traffic in rice, &c., from Nepal and the Terai will be increased, and turned from Pelebheet to Shahjehanpore, which will be the nearest railway station.

117. I have cleared a space of about 15 miles long and 100 feet broad from A to D and A to C. The results of the Surveys made in this cleared space are mentioned in Section IV. I have made a good many bricks near Doodooa Ghât, and collected and burnt kunkur for lime; material is thus ready to commence making wells in the cold weather.

118. The masonry boundary pillars in the Khyreeghur Division were commenced during last cold weather, and though the statement of pillars in the Appendix *(not printed)* only shows the work entirely completed in the year, materials have been carted to the sites, and since the end of the official year considerable progress has been made. Though the Forest Department has made these pillars, the manager of the Khyreeghur Estate has not done his share of demarcating, by making small earthen mounds on the village boundaries; and though I wrote on the subject to the Deputy Commissioner of Kheree, they have not yet been made. The manager hopes to get more land, and thus delays erecting the boundary marks; but as the limits have been judicially settled by the Assistant Superintendent of Settlement and Survey, the boundaries should be marked without any further delay.

Financial Commissioner has been written to about this.

119. When arrangements were made for these boundary pillars, the Sohelee Forests had not been made over to the Forest Department: but there is a small trench, some 6 inches deep, showing the boundary and masonry boundary pillars erected by the Deputy Commissioner in the two southern grants, and arrangements have been made to complete these during the present official year.

120. During the year collections by Government for miscellaneous produce have been made in the Khyreeghur* and Baraich Divisions—Gonda still continuing under the same contract to the Maharajah of Bulrampore.

* Khyreeghur from the 1st of October 1867.

121. The Forests in the Baraich Division are very straggling, and nearly the whole of the time of the Assistant, Mr. Adam, was taken up in this work. The results, after all, are not very satisfactory, as there has been only an increase of about Rs. 3,000, most of it due to the sale of timber. Mr. Bonny, the Overseer I previously referred to, the first six months of the year kept up a very large Establishment, of which I was at the time unaware, paying it from the Revenue. This, however, does not appear in the statement. The Revenue should have been about Rs. 4,000 more than shown, and the Establishment the same.

122. The result of the system cannot be shown in the Khyreeghur Division, as the collecting only commenced in October, and the greater part of the money is collected in April and May. From the data I have, the collections should be more than three times the amount that the contract has been usually leased for.

123. Great opposition has been made to this scheme by the talookdars who formerly obtained the contracts and made a good deal of money by them. The subordinates have been accused of great injustice and oppression, rightly or wrongly I cannot say, but no one has been convicted. The Government is, I fancy, the greatest loser, as a check cannot be kept on them.

The system is bad, as it brings the Forest Department into constant disputes with the people; whereas by the contract system all disputes have to be settled by the contractor. The Chief Commissioner is, I believe, averse to the system, and I shall propose that contracts be entered into from the commencement of the Forest year. The detail of their working will be forwarded in another report. I hope, however, that in time the amount derivable from Forest produce (grazing and minor Forest produce) will be sacrificed to the improvement of the timber, which will bring twenty times the revenue.

The Chief Commissioner is averse to giving contracts to any one individual, except in open sale.

124. A list of the prices of Forest produce will be found in Appendix No. III. These prices are, with some trifling exceptions; the same as those in force in Kumaon and Gurhwal.

125. In Appendix No. IV will be found a list of the trees found in the Forests. They are divided into reserved and miscellaneous; Khair and Tikoee have been recommended to the Chief Commissioner to be added to the reserved trees, the former (*Acacia catechu*) for its valuable product, gum catechu; and the latter (*Nauclea cordifolia*) for its timber, adapted for building, furniture, combs, &c., &c. During the next season the names of more trees should be added to the list, with explanations of the uses the timber or products are put to.

These recommendations have been approved by the Government of India, *vide* Notification No. 15F, dated 20th August 1868.

126. Freshly felled wood is heavier than that which has been cut some time, and as it is hoped that by the end of the next working season all the old logs will have been removed from the Forests to depôts, it will be necessary to have some logs ready for carting out in the dry weather of 1870, and I would therefore recommend that 4,000 trees should be cut during the cold weather of 1868-69.

127. As the timber is green, I have no fear of the fires during the hot weather of 1869, and the carting should commence before the fires of 1870.

128. Sufficient progress, in marking off the blocks, or of ascertaining their contents, has not been made for me to forward working plans to the Inspector General of Forests, but as I expect soon to have a personal interview with that officer, I hope to be able, after taking his advice, to forward to the Chief Commissioner a plan of proposed felling for next cold weather.

129. During the year a 2nd Assistant Conservator and an Overseer were sanctioned. Mr. Adam only joined in August, and before the close of the official year made arrangements to return to his former appointment in the Customs. Any experience he may have gained in Forest matters is thus lost to this department. Captain Losack joined in January, and was of great use in reporting the state of the Forests which he inspected, and in making Forest Surveys. The person temporarily appointed as Overseer was under suspension, and consequently did no work during the working season.

130. The office establishment has not been increased since the formation of the department in 1861, and there is much more work now than then; a proposal of increase will be forwarded to the Chief Commissioner as soon as possible.

131. More work might have been accomplished, I think, in the last 6½ years, but unfortunately the Conservator has been on leave nearly half that time, and, except for the first year and a half which it took me to learn the work, I have never been certain of holding the appointment for a longer period than six months. I trust, however, that, though the financial results of the present year have not been great, the progress made in working and conservancy will be considered satisfactory.

APPENDIX I.

Statement showing the Area of the Oudh Forests.

Name of Forest.		Areas obtained from Surveys made by Major Anderson, B. S. C., Revenue Surveyor.			Estimated area of Land in excess of those in Column 2.			Total.	Remarks.
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
		Sál.	Sissoo.	Miscellaneous.	Sissoo and Khair.	Miscellaneous.	Grass.		
Khyreeghur	Khyreeghur Forests	95,268	...	426	...	...	23,750	...	
	Sohelee "	...	...	...	12,913	12,913	12,913	...	
	Mohan "	...	...	...	...	10,270	...	...	
	Total 1st Division... ...	95,268	...	426	12,913	23,183	36,663	1,68,458	Square miles 263.
Baraich. ...	Bhurtapore Forests	...	7,391	...	2,400	2,400	2,400	...	
	Dumarwala "	44,512	3,997	...	...	10,000	10,000	...	
	Chukkia "	12,145	...	975	...	...	...	...	
	Churdah "	8,986	...	51	...	...	...	...	
	Bhinga "	30,201	13	155	...	...	...	...	
	Toolseepore "	16,683	...	20,000	...	...	...	...	
	Total 2nd Division... ...	1,12,527	11,401	21,181	2,400	12,400	12,400	1,72,309	Square miles 269.
Gonda ...	Toolseepore Forests	64,130	...	44,752	...	...	...	...	
	Total 3rd Division... ...	64,130	...	44,752	...	...	...	1,08,882	Square miles 170.
	Total 3 Divisions	2,71,925	11,401	66,359	15,313	35,583	49,063	4,49,644	Acres.
		425	18	103	24	55	77	702	Square miles.

APPENDIX II.

Abstract of Forest Surveys.

No. of Survey.	Length, feet.	Breadth, feet.	Sal.				Arseyna.				Miscellaneous.			
			Over 6′	Over 4½′	Over 3′	Over 1½′	Over 6′	Over 4½′	Over 3′	Over 1½′	Over 6′	Over 4½′	Over 3′	Over 1½′
1	5,280	100′	39	86	125	153	8	30	43	23	3	12	68	259
2	2,400	100′	22	38	86	55	4	13	45	65	1	6	15	54
3	5,280	100′	43	76	120	168	6	8	19	3	4	17	98	372
4	5,280	100′	48	56	115	284	8	22	93	23	8	14	54	346
5	5,280	100′	28	55	131	349	12	10	57	71	2	6	27	191
6	5,280	100′	31	27	102	302	6	7	28	130	1	4	32	174
7	5,280	100	22	34	143	373	...	1	12	9	...	1	15	167
8	5,280	100′	33	31	89	172	5	16	78	104	...	3	34	264
9	5,280	100′	46	32	112	210	13	20	65	209	7	5	46	250
10	5,280	100′	41	37	175	290	12	10	96	41	2	2	50	243
11	5,280	100′	56	28	131	126	6	16	102	18	2	...	50	278
12	5,280	100′	27	21	71	149	3	16	68	54	...	1	39	136
13	1,200	100′	1	3	27	103	4	2	6	169	...	...	3	26
14	5,280	100′	26	24	109	319	4	16	85	223	6	...	46	252
15	1,200	100′	...	...	2	9	...	...	...	13	4	...	19	51
16	1,800	100′	7	2	6	113	...	...	...	...	1	...	10	70
17	5,280	100′	41	61	141	191	18	18	38	76	3	...	35	41
18	2,200	100	13	19	66	138	7	2	18	32	...	4	8	65
Total ...	77,440	100′	524	630	1,751	3,504	116	207	853	1,263	44	75	649	3,239
Per Acre ...			2·9	3·5	9·8	19·7	·7	1·2	4·8	7·2	·2	·4	3·5	18·3

Area surveyed ... ... 177·7 acres.

APPENDIX III.

Price List of Produce in the Oudh Forests.

Name.	English Name.	Quantity.	Rate.
	II		Rs. A. P.
Khair Chirahooa	Khair Kurries	Score ...	7 0 0
Ditto Bullees	Ditto Bullees	„ ...	1 8 0
Moosul Khair	Ditto Pestles	„ ...	2 0 0
Sakoo	Old Sâl wood	C. ft. ...	0 2 0
Sheeshum	Ditto Sissoo wood	„ ...	0 2 0
Chob Kham Mootfurrikat	Miscellaneous „	„ ...	0 2 0
Ditto Sokhta	Firewood	Head load ...	0 0 1
Ditto ditto	Ditto	Bhangy ...	0 0 3
Ditto ditto	Ditto	Horse or Buffalo ...	0 0 6
Ditto ditto	Ditto	Cart 2 Ox ...	0 2 0
Ditto ditto	Ditto	„ 3 „ ...	0 3 0
Ditto ditto	Ditto	„ 4 „ ...	0 4 0
Koela	Charcoal	Head load ...	0 0 3
Ditto	Ditto	Bhangy ...	0 1 0
Ditto	Ditto ...	Ass load	0 1 6
Ditto	Ditto	Horse or Buffalo ..	0 2 0
Ditto	Ditto	Cart 2 Ox ...	0 12 0
Ditto	Ditto	„ 3 „ ...	1 0 0
Ditto	Ditto	„ 4 „ ...	1 4 0
Khuradee Chârpae	Turned logs for beds ...	Set	0 4 0
Sada ditto	Rough ditto	„	0 2 0
Kuthra, large	Wooden dish	Score	0 8 0
Ditto, small	Ditto	„	0 4 0
Rubana "Ghaira"	... ...	„	0 4 0
Churâee	Walking stick	Each	0 0 2
	V		
Churree or Churâee	Grazing	Per Buffalo ...	0 6 0
Ditto	Ditto	„ Bullock ...	0 2 0
Ditto . ..	Ditto	„ 100 Goats & Sheep	3 0 0
	VI		
Khair Bhuttee	Catechu Boiler	Per Boiler ...	7 0 0
Ditto Tyar	Catechu	„ Maund ...	1 0 0
Lakh	Gum Lac	„ Seer ...	0 0 6
Gound	Gum Arabic	„ Maund ...	1 0 0
Shuhud	Honey	„ „ ...	1 0 0
Moum	Wax	„ Seer ...	0 0 9
Koolaindee Muhooa	Muhooa seeds	„ Maund ...	1 0 0
Phool Toon	Toon flowers	„ „ ...	2 0 0
Ditto Dhâk	Dhâk „	„ Seer ...	0 0 1
Singhara	Water Nut	„ Maund ...	0 4 0
Khuskhus	Grass root for Tatties ..	„ „ ...	0 4 0
Poola Ghâs	Thatching Grass	Head load ...	0 0 6
Ditto	Ditto	Horse or Buffalo ...	0 0 9
Ditto	Ditto	Cart 2 Ox ..	0 3 0
Ditto	Ditto	„ 3 „ ...	0 4 0
Ditto	Ditto	„ 4 „ ...	0 6 0
Baid or Saintha	Cane or reed Grass	Head load ...	0 0 6
Ditto	Ditto	Bhangy ...	0 1 6
Ditto	Ditto	Horse or Buffalo ...	0 2 0
Ditto	Ditto	Cart 2 Ox ...	0 8 0
Ditto	Ditto	„ 3 „ ...	0 12 0
Ditto	Ditto	„ 4 „ ...	1 0 0
Baid	Cane	„ 2 „ ...	1 0 0
Ditto	Ditto	„ 4 „ ...	2 0 0
Bans	Bamboos	„ 2 „ ...	0 8 0
Ditto	Ditto	„ 4 „ ...	1 0 0
Moonj and Sirkee	Sacharum Munja and its upper reed	Head load ...	0 0 9
Ditto	Ditto ...	Bhangy ...	0 1 6
Ditto	Ditto ..	Horse or Buffalo ...	0 2 0
Ditto	Ditto ...	Cart 2 Ox ...	0 12 0
Ditto	Ditto ...	„ 3 „ ...	1 0 0
Ditto	Ditto ...	„ 4 „ ...	1 4 0
Dunkus	... ...	Head load ...	0 1 0
Ditto	... .	Bhangy ...	0 1 6
Ditto	... .	Horse and Buffalo ...	0 2 0
Ditto	... ...	Cart 2 Ox ...	1 0 0
Ditto	... .	„ 3 „ ...	1 8 0
Ditto	... .	„ 4 „ ...	2 0 0

APPENDIX III,—(*continued.*)

Price List of Produce in the Oudh Forests.

Name.	English Name.	Quantity.	Rate.
			Rs. A. P.
Chutaee, Nurkool	Reed Mat	Head load ...	0 1 0
Ditto	Ditto	Bhangy ...	0 2 0
Ditto	Ditto	Cart 2 Ox ...	0 6 0
Ditto	Ditto	„ 3 „ ...	0 8 0
Ditto	Ditto	„ 4 „ ...	0 12 0
Kulums or Naiza	Native pens	„ 2 „ ...	1 0 0
Ditto	Ditto	„ 4 „ ...	2 0 0
Kumaila or Rohinee	... ...	Per seer ..	0 0 3
Peepla moorh	... ...	„ ...	0 0 3
Hur, Buhera Aonla or Triphula	... ...	„ ...	0 0 1
Kakra Singhee	... ...	„ ...	0 0 2
Kupoor Kuchree	... ...	Per maund ...	0 2 0
Nagun Motha	Sweet-smelling grass or (Cyperus perteunis)	„ ...	0 8 0
Kunwul gutta	Lotus seed	„ ...	1 0 0
Kusairoo	Root (Cyperus tuberosus) ...	„ ...	0 4 0
Ruttun jote	... ...	„ ...	0 8 0
Sitawur	... ...	„ ...	0 8 0
Mooslee Semul	Semul root	„ ...	0 8 0
Ditto white and black	... ...	„ ...	0 8 0
Bilaee kund	... ...	„ ...	0 4 0
Myuphul	... ...	„ ...	0 4 0
Peepul	Long pepper	Per seer ...	0 0 6
	IX		
Bunghao	Wild Cattle	Each ...	2 0 0
Muchhlee	Fish	Per maund ...	0 8 0
Moorghabee	Teal	Each ...	0 0 3
Churra Gâe Bhains	Hides	„ ...	0 2 0
Ditto Hurun	Ditto Deer	„ ...	0 1 0
Seeng Bhains, &c.	Buffalo, &c., horns	Per pair ...	0 0 3
Ditto	Ditto	Cart 2 Ox ...	1 0 0
Ditto	Ditto	„ 4 „ ...	2 0 0
Ditto Hurun	Deer's horns	Pair ...	0 0 3
Choona	Stone lime	Cart 2 Ox ...	0 4 0
Ditto	Ditto	„ 3 „ ...	0 6 0
Ditto	Ditto	„ 4 „ ...	0 8 0

APPENDIX IV.

Names of Trees in Oudh Forests.

	English.	Local Name.	Systematic Name.
	RESERVED.		
1	Sâl	Sakhoo	Shorea Robusta.
2	Sissoo	Sheeshum	Dalbergia Sissoo.
3	Toon	Toon	Cedrela Toona.
4	Ebony	Abnoos	Diospyros speciosa.
5	Dhao	Dhao	Conocarpus latifolia.
6	Arseyna	Arseyna or Usna ...	Terminalia tomentosa.
	UNRESERVED.		
7	Huldoo	Huldoo or Tikoee ...	Nauclea Cordifolia.
8	Khair	Khair	Acacia Catechu.
9	Jamun	Jamun	Syzygium Jambolanum.
10	Peepul	Peepul	Ficus religiosa.
11	Burgud or Banian tree...	Burgud	Ficus Indica, or Bengalensis.
12	Khabur	Khabur	Variety of Ficus religiosa.
13	Goolur	Goolur	Ficus racemosa.
14	Pakur	Pakur	Ficus venosa.
15	Koosum	Koosum	Schleichera trijuga.
16	Mohwah	Mohwah	Bassia latifolia.
17	Bail	Bail	Ægle Marmelos.
18	Bair	Bair	Zizyphus jujuba.
19	Kumela	Kumela	Rottlera tinctoria.
20	Siriss	Siriss	Acacia Speciosa.
21	Elephant creeper ...	Muhwal	Bauhinia Vahlii.
22	Kuchnar	Kuchnar	Bauhinia variegata.
23	Semul (Cotton tree) ...	Saimul	Bombax Malabaricum.
24	Kurounda	Kurounda	Carissa Carandas.
25	Dhak	Dhak	Butea frondosa.
26	Amultas	Amultas	Cathartocarpus fistula.
27	Lusora	Lusora...	Cordia Myxa.
28	Hur or Hurra... ...	Hur or Hurra	Terminalia Chebula.
29	Buhaira	Buhaira	Terminalia Bellerica.
30	Aonla	Aonla	Emblica Officialis.
31	Sheora	Sheora...	Epicarpurus Orientalis.
32	Marking nut tree ...	Bhilawa	Semicarpus Anacardium.

Form No. 21.

FOREST DEPARTMENT.

Annual Summary of Revenue and Expenditure in the different Divisions during 1867-68.

CLASSIFICATION.	Khyreeghur.	Baraich.	Gonda.	Total as per Forest Books.	Total as per Accountant General's Books.
RECEIPTS.					
I.—Sale of timber at depôts	21,816 12 7	.....	.....	21,816 12 7	21,816 12 7
II.—Sale of timber removed by purchasers	9,480 8 0	.....	.....	16,424 2 0	16,424 2 0
III.—Duty on Foreign timber	.....	.....	.....	.....	.....
IV.—Permit fees	.....	.....	.....	.....	.....
V.—Grazing dues	1,090 0 6	14,660 6 10	1,885 9 4	17,636 0 8	17,636 0 8
VI.—Sale of fruits, &c.	877 4 11	1,279 7 3	1,398 11 9	3,555 7 11	3,555 7 11
VII.—Sale of confiscated timber	103 0 0	1,060 0 0	.....	1,163 0 0	1,163 0 0
VIII.—Fines and forfeitures	.....	72 8 0	56 5 4	128 13 4	128 13 4
IX.—Miscellaneous	5,628 11 0	100 0 0	.....	5,728 11 0	5,728 11 0
Total, RECEIPTS	38,996 5 0	17,172 6 1	3,340 10 5	66,452 15 6	66,452 15 6
CONSERVANCY AND WORKING.					
I.—Timber expenses	43,377 8 0	.....	.....	43,377 8 0	43,377 8 0
II.—Purchases of stock and cattle	8 8 0	8 8 0	8 8 0	25 8 0	25 8 0
III.—Feed and keep of cattle	356 10 2	356 10 0	356 10 0	1,069 14 2	1,069 14 2
IV.—Rent of leased forests	.....	.....	.....	.....	.....
V.—Charges in collecting revenue on grass, &c.	1,094 0 0	2,148 14 8	423 3 1	4,127 6 0	4,127 6 0
VI.—Plantations	10 0 0	.....	.....	10 0 0	10 0 0
VII.—Forest work	4,247 6 6	805 0 0	7 14 6	5,060 5 0	5,060 5 0
VIII.—Forest survey	.....	.....	.....	.....	.....
IX.—Experiments on timber	.....	.....	.....	.....	.....
X.—Communications and buildings	16,709 5 9	175 14 0	13 0 0	16,898 3 9	16,898 3 9
Total, CONSERVANCY and WORKING	65,803 6 5	3,494 14 8	809 3 7	70,568 12 11	70,568 12 11
ESTABLISHMENTS.					
I.—Salaries	9,917 9 7	4,440 10 3	3,063 12 0	16,333 7 7	16,333 7 7
II.—Allowances	1,883 7 11	1,259 0 11	581 15 5	4,551 12 3	4,551 12 3
III.—Contingencies	1,089 11 10	544 13 11	544 14 0	2,179 7 9	2,179 7 9
Total, ESTABLISHMENTS	12,890 13 4	6,244 9 1	4,190 9 5	23,064 11 7	23,064 11 7
GRAND TOTAL, Expenditure	78,696 3 9	9,739 7 9	4,999 13 0	93,633 8 6	93,633 8 6

Form No. 22.

FOREST DEPARTMENT.

Dr. *Annual Abstract Account of the Cash Transactions of the Forest Department in the Province of Oudh for the year* 1867-68. Cr.

Year.	Heads of Account.	Rupees.
	Cash balance on the 1st April 1867	25,874 14 5
	III. Forest—	
	I.—Sale of timber brought to depôts	21,816 12 7
	II.— Ditto removed by purchasers...	16,424 2 0
	V.—Grazing dues	17,636 0 8
	VI.—Sale of fruits	3,555 7 11
	VII.—Sale of confiscated, drift, and waif timber	1,163 0 0
	VIII —Fines and forfeitures	128 13 4
	IX.—Miscellaneous receipts	5,728 11 0
	TOTAL ...	66,452 15 6
	Advances recoverable	200 0 0
	Remittances from State Treasuries	78,651 12 11
	GRAND TOTAL, Receipts ...	1,71,179 10 10

Year.	Heads of Account.	Rupees.
	6. Forests	
	A. Conservancy and working—	
	I.—Timber expenses	43,377 8 0
	II.—Purchase of stock	25 8 0
	III.—Feed and keep of cattle	1,069 14 2
	V.—Charges in collecting revenue on grass, &c.	4,127 6 0
	VI.—Plantation	10 0 0
	VII.—Forest work	5,060 5 0
	X.—Communication and buildings	16,898 3 9
		70,568 12 11
	B. Establishment—	
	Salary of Conservator and Executive Officers	10,480 10 3
	Ditto Establishment	5,852 13 4
	Travelling allowance	4,551 12 3
	Contingencies	2,179 7 9
		23,064 11 7
	TOTAL ...	93,633 8 6
	Remittances to State Treasuries	62,404 9 0
	Cash balance on the 31st March 1868	15,141 9 4
	GRAND TOTAL, Expenditure ...	1,71,179 10 10

Form No. 23.

FOREST DEPARTMENT.

Annual Statement of Outstandings and Liabilities of the Department on account of Contractors and Disbursers.

DIVISION.	Department Debtor.			Department Creditor.			Balance due.	
	At commencement of year.	Recoveries in cash and value of supplies and work done during year.	At close of year.	At commencement of year.	Payments made during year.	At close of year.	To Department (Outstandings).	By Department (Liabilities).
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1st or Khyreeghur Division ...	... ...	2,225 7 1	2,225 7 1	23,551 3 2	... ...	23,551 3 2	21,325 12 1	.. ...
Contractors.								
Carters, &c.								
Executive Engineer, Bareilly	... ...	... ...	... ...	1,050 0 0				
Stock.								
		Rs. A. P.						
Sohelee Depôts, Logs 764	@ 40 cft. @	0 4 0 per foot	...	11,460 0 0				
Sardah " " 867	@ 40 cft. @	0 8 0 "	...	16,940 0 0				
Kunhout " " 46	@ 40 cft. @	0 12 0 "	...	1,380 0 0				
Muhara " " 1,163	@ 50 cft. @	1 0 0 "	...	58,150 0 0				
Cawnpore " " 1,175	@ 50 cft. @	1 8 0 "	...	98,125 0 0				
Sardah " Sleepers ... 462	@	2 8 0 each	...	1,155 0 0				
Cawnpore " " 54	@	4 0 0 "	...	216 0 0				
Kooria " " 240	@	3 0 0 "	...	720 0 0				
Bareilly " Planks... ... 92	@	1 0 0 "	...	92 0 0				
				1,89,288 0 0				
Executive Engineer, Nowgong ...	1,08,000 0 0							
" " Fyzabad ...	16,000 0 0							
Deputy Commissioner, Kheree-Kutna...	525 0 0							
" " " School...	176 6 6							
	1,24,701 6 6						64,586 9 6	

Form No. 25.

FOREST DEPARTMENT.

Annual Timber Account for 1867-68.

Particulars.	Pieces.	Total.
	Sâl Logs.	
I.—Stock in hand at the following depôts at the commencement of the year:		
Sardah Depôt, Kulkan	597	
Khujooria	49	
Bareilly	434	
Shahjehanpoor	550	
Cawnpore	160	
Kunhout Depôt (Kooria)	520	
		2,310
II.—Timber received at Depôts from the Forests	...	1,894*
	Sâl Sleepers.	
I.—Stock in hand—		
Cawnpore Depôt	210	
Kooria „	38	
Moojha Village	21	
Roodpoor „	16	
Peepuria „	4	
Kulkan Depôt	218	
Sheerpoor village (with Kureemoollah Khan)	12	
		519
II.—Timber received at depôts	...	448
	Sissoo planks.	
I.—Stock in hand—		
Bareilly Depôt	92	92
Total Pieces ...	Sâl logs	4,204
	„ sleepers	967
	Sissoo planks ...	92

Particulars.	Pieces.	Total.
	Sâl Logs.	
I.—Timber removed by purchasers from depôts	...	209
II.—Timber lost...	...	...
III.—Stock in hand at the close of the year at the following depôts:—		
Kooria Depôt...	46	
Cawnpore	1,175	
Khujooria	63	
Nugla Ghât	50	
Doodooa Ghât	500	
Suthiana	25	
Bel Ghât	239	
Muroucha Ghât	739	
In transit on road and river for Cawnpore—	1,163	3,995
	Sleepers	
I.—Timber removed by purchasers	„	
II.—Stock in hand—	187	
Kooria Depôt...	54	
Cawnpore „	21	
Moojha Village	16	
Roodpoor „	4	
Peepuria „	12	211 } Sold
Sheerpoor „	462	756 } Sold
Diggia Ghât Depôt		
	Planks	
III.—Bareilly Depôt	92	92
Total Pieces ...	Sâl Logs.	4,204
	Sleepers	967
	Planks	92

Form No. 26.

FOREST DEPARTMENT.

Statement showing the amount realized on account of the different classes of Timber sold during 1867-68.

DIVISIONS.	No. of Logs sold.	Cubical contents.	Amount realized and due on account of Timber sold.	Average amount per Log.	Average cubical contents of Logs.	Average amount per 100 cubic feet.	REMARKS.
1st or Khyreghur Division.			Rs. A. P.	Rs A. P.	Ft.	Rs. A. P.	
Executive Engineer, Fyzabad, Sardah Depôt ...	1,200	48,000	16,000 0 0	20 0 0	40	50 0 0	
Deputy Commissioner, Kheree, at Sohelee „ ...	35	1,400	525 0 0	15 0 0	40	37 8 0	
„ „ „ { Sohelee Depôt ...	47*	21,127	792 4 0	16 13 7	45	45 0 0	
„ „ „ { and Sardah Ghât ...	81*	3,404	1,276 6 1	15 12 4	42	37 8 0	
Executive Engineer, Bareilly, N. W. Provinces ...	81*	3,200	3,200 0 0	40 0 0	40	100 0 0	
Deputy Commissioner, Kheree, at Sohelee Depôt ...	11	4,705	176 6 6	16 8 9	43	37 8 0	
	1,455						
Sleepers at Cawnpore	211	.....	896 12 0				
			22,866 12 7				
Deduct amount due but not realized during the year ...			1,050 0 0	Executive Engineer, Bareilly.			
Balance ...			...				
Add amount realized on account of former years ...			...				
Total shown as Revenue on account of timber sales ...			21,816 12 7				

Pieces.	
Timber sold in previous years remaining unremoved at the commencement of the year ...	1,600
Timber sold during the year ...	1,455
Total ...	3,055
Timber remaining unremoved at the close of the year ...	2,686
Balance removed from depôts by purchasers during the year ..	369
Total ...	3,055

Executive Engineer, Nowgong...	1,600
As per column I... „ ...	1,455
Executive Engineer, Fyzabad ...	1,200
Ditto, Nowgong, 1,600—160=1,440	
Deputy Commissioner, Kheree...	35
„ „ „ ...	11
	2,686
Executive Engineer, Nowgong...	160
As per column I „	209
	369

Form No. 28.

FOREST DEPARTMENT.

Annual Account of Forest Revenue for the year.

	Rs.	A.	P.
Receipts	66,452	15	6
Expenditure	93,633	8	6
Deficit	27,180	9	0
Add (or subtract) difference between Assets and Liabilities at the commencement and close of the year	53,699	8	9
Net Revenue	26,518	15	9

NOTE.—Besides the above sums, which show the actual transactions on timber brought into the depôts, the value of timber in various states in the Forests and in transit may be approximately estimated at Rupees 29,150, being 2,915 logs at As. 4 per cubic foot, or Rs. 10 per log of 40 cubic feet.

Detail of difference between Assets and Liabilities at the commencement and close of the year.

	At the commencement of the year.	At the close of the year.	Difference. In favor of the year.	Difference. Against the year.
Value of timber and other stock ..	8,661 9 8	64,586 9 6	55,924 15 10	
Outstanding on account of sales and excess payments to contractors ..	23,551 3 2	21,325 12 1	..	2,225 7 1
Total Assets ...	32,212 12 10	85,912 5 7	55,924 15 10	2,225 7 1
Deduct Liabilities ..				
Balance ...	...	...	53,699 8 9	

ORDERS OF THE GOVERNMENT OF INDIA.

No. 395F, dated 12th November 1868.

From—Colonel C. H. DICKENS, R. A., *Secy. to the Govt. of India, P. W. Dept.,*
To—The Chief Commissioner of Oudh.

I am directed to acknowledge receipt of your letter No. 1353, dated 10th September 1868, forwarding the Annual Report of Forest Administration in Oudh for 1867-68.

2. This Report is written by Captain E. Wood, the present Conservator, and it is accompanied by a careful and detailed review by yourself.

3. In the Appendix is given a statement of the area of the reserved or State Forests in Oudh, showing a total of 702 square miles, distributed in three divisions, as follows :—

I. Division in Kheree District ...	...	263 square miles.
II. Ditto in Baraich	...	269 ,,
III. Ditto in Gonda	...	170 ,,
TOTAL	...	702 square miles.

With regard to the vegetation, they are divided as follows :—

Sâl forests	...	425 square miles.
Sissoo and Khair	...	42 ,,
Miscellaneous	...	158 ,,
Grass lands	...	77 ,,
TOTAL	...	702 square miles.

This corrects a mistake in the Report of 1866-67, adopted in para. 7 of the Government of India Review, where the area of the Sâl Forests of the 1st Division was given at 183,074 acres, or 295 square miles.

It is explained that these figures are only an approximation, and that the exact area cannot yet be given, because the boundaries have not in all cases been fixed.

4. The erection of permanent boundary pillars was in course of progress in the Kheree and Baraich Divisions, but had not been commenced yet in Gonda, as the boundary lines between village and Forest lands had not yet been settled. In your review the hope is expressed that, as a full staff of Assistants has now been appointed, the Conservator will be able to devote himself to carry out the demarcation of the Forests in the Gonda Division.

5. In para. 5 of the orders on the Report for 1866-67, a proposalmade by the late Conservator, Mr. F. Read, was noticed, to add to the Forests certain tracts south of the Sardah River in the Mohumdee District. It was requested that progress in this matter be reported to the Government of India. In para. 14 of your review, it is said that the question of resuming those waste land grants is still under consideration.

6. Regarding two Forests in the Baraich District, the Charda Sâl Forest and the Rajghur Singha tract, which the Conservator desires to include within the limits of the State Forests, you say that the claims of private parties to these Forests require judicial settlement in the Regular Courts, before further action can be taken.

7. In paras. 23 to 45 a brief description of the Forests in the three divisions is given, and paras. 57 to 70 are devoted to a discussion of the requirements of the agricultural population in the vicinity, which they have hitherto been in the habit of obtaining from the Forests. This subject is also noted in paras. 17 to 19 of your review, and the Inspector General of Forests reports that he has submitted to you detailed proposals for the settlement of this matter. On the same question there has been some correspondence between the Government of India and your predecessor, and His Excellency the Governor General in Council considers it useful, with the view of eliciting your further views on this important subject, briefly to review what appears to be the present state of this question.

8. The work of demarcating the Oudh Forests commenced in 1862, in what is now called the Kheree District, between the Sardah and Korially Rivers.

The then Chief Commissioner considered that all the waste lands in that part of Oudh had become the property of the State at the time of annexation, and were thus declared at the settlement of 1858. This view he stated in a letter to the Government of India of the 1st September 1863 (para. 19).

Subsequently, Government Forests were demarcated in the Baraich and Gonda Districts, and it is supposed that in these districts also the rights of Government over the Forest lands were at the time considered to be undoubted.

9. In connexion herewith it may be noticed that waste lands in the same districts in which the Forests are situated, have been sold and granted in proprietary right, and that other waste lands were advertised for sale. It is probable that on some of these lands the people were in the habit of grazing their cattle, of cutting wood, and collecting other Forest produce, and His Excellency in Council desires to be informed whether in the case of such sales or grants the privileges formerly exercised by the inhabitants were reserved to them, or whether they were extinguished; and in the latter case, whether any equivalent or compensation was given to the people.

10. The Forest rules, which were promulgated in September 1866, were apparently framed on the supposition that Government held the Forest lands that had been demarcated as State Forests, subject to no rights or privileges of other parties; in other words, that these Forests were not encumbered by customary right or privileges. These rules imply that the right to all the produce of the Forests is vested in the Government. Thus all interference with trees, timber, and Forest produce, without the authority of the Conservator, is prohibited in Rules VI, IX, X, and XI. Burning grass or jungle, clearing the Forest for cultivation, burning lime or charcoal, or the grazing of cattle, is prohibited by Rule XII; provision to protect the Forest against fires from outside the Forest limits is made in Rule XIII; and the power of closing existing roads through the Forests is assumed in Rule XIV.

11. A limited permission to cut unreserved timber for their own *bonâ fide* use for domestic and farming purposes is granted in Rule VII to villagers living in the Forests or within three miles of the Government boundary line, but this concession was apparently made as a free gift on the part of Government, and not as a matter of right. If the above view of the rights of the State in these Forests is correct, then all further concessions that have been made, or that may still have to be made, to satisfy the requirements of the agricultural population in the vicinity of the Forests, must apparently be regarded in the same light.

12. It was reported in your predecessor's letter of the 2nd July 1867, that it was intended to enforce the prohibition against the grazing of cattle gradually, and that it was proposed, over and above the additional areas of waste land included within the new boundaries of villages, to allot to them

certain parts of the Forests as fuel allotments, by way of compensation for all the privileges which they may have lost by the introduction of strict conservancy rules.

In your review of the present Report, however, it is said that much difficulty has been experienced in satisfying the talookdars and villagers, and that, though the subject has received unremitting attention, but little progress has yet been made towards its solution.

13. It is gathered from the report on this subject, submitted to you by the Inspector General, that in a large portion of the Forests it will be found difficult to effect the demarcation of fuel allotments, and that the requirements of the surrounding population, and the arrangements for satisfying them, must be considered in detail, separately with reference to each sub-division of the Forest; that in fact a detailed enquiry into the circumstances of each village must be made. To make this enquiry in a satisfactory manner, the Inspector General has suggested to you the appointment of a Special Commission consisting of an officer of the Revenue and one of the Forest Department, whose joint report, subject to an appeal within six months, would be final when sanctioned by the Chief Commissioner.

Regarding these proposals, an expression of your views will be awaited.

14. Should you entertain the proposal of entrusting the settlement of this matter to a Special Commission, it appears right to state that, if the basis on which the Oudh Forest Rules were framed, that is, the assumption of complete rights of the State in these Forests, can be maintained, there will be no necessity for giving legal force to the decisions of the Commission, for any concessions that may be made will be free concessions on the part of Government.

15. But if the basis of the existing rules is not tenable, then a clause must be inserted in the Oudh Forest Rules, giving legal force to the decisions of the Commission when sanctioned by the Chief Commissioner, and this will require an additional section in the Forest Act. Under all circumstances, His Excellency in Council considers that it will be proper to insert such a Section in the Forest Act, to enable Local Governments to effect a satisfactory settlement of customary or prescriptive rights in the Forests.

16. The Governor General in Council regrets to observe that, in your opinion, Captain Wood has not been sufficiently alive to his duty in the matter of acting in consultation with the Civil authorities regarding the claims of the inhabitants near the Forests.

His Excellency in Council desires that every exertion shall be made to reconcile the wants of the agricultural population with the requirements of a rational management of the Forests, and he concurs with you in the hope that Captain Wood will, for the future, show more skill in conciliating the various interests with which his operations bring him into contact.

17. In regard to the protection of the Forests, it is apparent, from paras. 55 and 56 of the Report, that no progress has as yet been made in the matter of keeping out fires from the Forests. You state that, in your opinion, the Conservator does not exaggerate the evil done to the Forests by fires, but express a doubt whether these can be immediately put a stop to, as it would be out of the question entirely to exclude from this part of the country the enormous herds of cattle sent to graze there.

18. In another passage of the review you say that the stoppage of firing the jungles may involve the closing of the Forests to all grazing, and the consequent migration of the pastoral population to Nepal, and you apprehend

that if fires, in connection with the grazing interests, be entirely stopped, the dense vegetation will so choke up the Forests that they will become fitted only for wild animals, and inaccessible to the Forest Department.

His Excellency in Council hopes that your apprehensions will not be realized. An attempt might be made to devise measures for satisfying moderate requirements of the agricultural population without serious detriment to the Forests. It will, His Excellency in Council trusts, be found possible to regulate the grazing of cattle within the limits of the State Forests, without necessitating the emigration of the inhabitants. On the other hand, reports from the Central Provinces seem to show that the exclusion of fires, while favoring the growth of the arborescent vegetation, rather tends to keep down grass and low jungle.

Moreover, division and sub-division lines must, under all circumstances, be cleared through the Forests, which will make them sufficiently accessible for all purposes of protection and management.

19. Fair progress appears to have been made in the management and improvement of the Forests. A main division line has been cleared from Doodooa Ghât on the Sohelee River, 15 miles long and 100 feet wide, through the north-westerly portion of the Khyreegurh Forests, and two other lines in a north-easterly and east-south-easterly direction are also mentioned by the Conservator in para. 102 as in course of clearing.

20. The Conservator further proposes to cut branch lines, 50 feet wide, which will divide the Forest into blocks of about equal size.

The main lines he proposes to convert into roads to facilitate the export of timber.

21. These measures are of great importance, and they appear to His Excellency in Council justly to deserve commendation. The Conservator correctly enumerates the following advantages to be attained by these division lines.

They will make possible the valuation of the growing stock in each block or compartment; they will facilitate inspection, control, and protection; they will aid in the prevention of jungle fires, and furnish the basis of a systematic plan of operations; and, lastly, they will facilitate the export of the timber and other Forest produce.

22. The cutting of one of the lines has already been used to make an exact valuation survey of 177·7 acres, the results of which are given in the Statements appended to the Report.

23. At the same time an attempt has been made by Captain Wood to determine the rate of growth of the Sâl tree by counting the concentric rings in the wood. His results, as compared with an estimate made by Dr. Brandis in a report on the Khyreegurh Forests, dated 23rd June 1863, stand as follow:—

	6′ Girth	4′6″ Girth.
Dr. Brandis, 1863.—	80 years	50 years
Captain Wood, 1868.—	95 ,,	65 ,,

It is evident that both estimates are as yet preliminary only, and subject to correction hereafter.

24. The results of the felling operations, as far as they have gone, make it apparent that a large proportion of the mature trees in these Forests is unsound, and Captain Wood thinks that one-third only will be available for the market.

25. This circumstance will greatly affect the annual yield, which in 1863 was estimated at 4,000 trees as a maximum for the Khyreeghur Forests. As it

does not appear necessary to commence regular felling operations in the other Divisions, it will for the present be sufficient to provide for the first or Khyreeghur Division only.

26. For this division a plan of operations has been drawn up jointly by the Conservator and the Inspector General of Forests, based upon the data at present available, and this plan of operations limits the number of trees to be felled during the next two years at 2,900, including besides Sâl two other reserved kinds, Asna and Huldoo, the wood of which is said to be in demand; and it lays down the order in which felling operations are to be commenced and continued.

27. It is observed that the main provisions of this plan of operations have received your approval, and they should be adhered to during the next two years.

28. Satisfactory progress is reported in the cutting of creepers. In last year's Report, 58,923 acres were reported to have been cleared; to this have now been added, as shown in the Appendix, (*not printed*) 36,770 acres, making a total of 95,693 acres, or nearly 150 square miles.

29. The total amount expended on these operations to the end of the year under review is stated as follows:—

		Acres cleared.	Cost. Rs.	Rate per square mile. Rs A.
I. Division 1864 to 1866	... ...	35,368	9,006	163
1866-67	... ...	23,554	1,359	36-14
1867-68	... ...	36,770	4,247	74
	TOTAL ...	95,692	14,612	98
II. Division 1867-68	... ...	1,12,527	1,805	10
	TOTAL ...	2,08,219	16,417	50

30. From the data given in the Report it would appear that the whole of the Sâl Forests in the first division have now been cleared of creepers at an average cost of Rs. 98 per square mile, and that in the second division the operations in the Sâl Forests have been nearly completed at the rate of Rs. 10 per square mile.

So much is clear, however, that the anticipations of the Report for 1866-67 (page 3) will not be realized, *viz.*, that when the whole of the Forests are cleared, the average cost will not far exceed Rs. 20 per square mile. For it is observed that the whole of the Sâl Forests measure 425 square miles only.

31. The timber operations during the year under review are detailed in the annual timber accounts (Forms 24, 25, 26). The stock in hand at depôts at the commencement of the year is given at—

Sâl logs	2,310
Sleepers	519

During the year were brought to depôts—

Sâl logs	1,894
Sleepers	448

Removed by purchasers—

Sâl logs	209*

Stock in hand at the close of the year—

Sâl logs	3,995†
Sleepers	967‡

Besides 92 Sissoo planks, which remained in stock from the beginning of the year.

* Besides this quantity, 160 logs are stated to have been removed in Statement 26, making a total of 369 logs removed during the year.

† Part of this stock was sold.

‡ Of these, 211 were sold, but not removed during the year, leaving 756 sleepers, Government property, in store.

32. According to the annual timber account, the stock in hand at the close of the year was scattered over not less than 14 different depôts. This appears an inconvenient arrangement, which must, His Excellency in Council apprehends, render control difficult.

33. The selection of Depôts is intimately connected with the general arrangements to be made for the disposal of the timber. These are discussed in paragraphs 102 and 116 of the Conservator's Report, and 33 to 36 of the Chief Commissioner's review. As mentioned before, felling operations on a large scale are for the next few years contemplated in the first or Kheree Division only, and both yourself and the Conservator are of opinion that the felling, preparing, and bringing to Depôts must still be done on account of the Department. This is in accordance with the orders conveyed in paragraph 13 of last year's review by the Government of India. In that passage an enquiry was made regarding 650 trees reported to have been felled and removed by purchasers. The Conservator, in paragraphs 46 to 48, now reports that these trees, which were sold standing by Mr. Read, the late Conservator, were not dead, but green trees; that the contractors were allowed to select what trees they liked, and that their work had been done in a most wasteful manner. This circumstance is to be regretted, and it affords additional grounds for maintaining last year's orders, that green timber is not at present to be sold standing, but must be felled and brought to Depôts for sale by the agency of the Forest Department.

34. The arrangements for the export and sale of timber have been the subject of a joint memorandum by the Inspector General and Conservator of Forests, which was submitted to you, and has received your approval. In this memorandum it is explained that there are two main lines of export from the Kheree Forests: one down the Gogra river to Byram Ghât, where it is proposed to establish a sale depôt, another in a westerly direction towards Bareilly and Shahjehanpore. For the timber to be exported in this direction, a depôt is to be established, either on the Sardah or on the Sohelee river. These arrangements appear suitable; they will consolidate operations and facilitate control.

35. In paragraph 10 of the orders on last year's Report it was said, that great diligence should be used to recover the remaining old timber from the Forests. It is now reported that of the 5,559 logs remaining in the Forests at the commencement of the year, 1,894 logs were brought out during the year; that at the close the operations were in active progress, and that the whole of the old timber would be removed by the close of the working season of 1869.

The logs brought to depôts were all old timber, no fresh trees having been felled during the year.

This progress in removing the old logs is satisfactory, and His Excellency in Council is glad to observe that you have directed the Conservator to arrange at once for the felling of all dead standing trees.

36. One thousand four hundred and fifty-five logs and 211 sleepers are reported to have been sold during the year; the logs measured from 40 to 45 cubic feet, and realized from Rs. 37-8 to Rs. 100 per 100 cubic feet.

37. The disposal of the various articles of minor Forest produce, including wood of the unreserved kinds, grazing, grass, fruits, gums, and other products, has lately been the subject of some correspondence in Oudh. It is discussed in paras. 120 to 124 of the Report, and in para. 25 of the Chief Commissioner's review. It appears that before 1866 the right of collecting the minor Forest produce was sold annually by Deputy Commissioners in their districts. In 1866 the late Conservator introduced the system of direct collection of these dues on account of Government. In the 1st and 2nd Divisions

this system has been in force throughout the year. Although this system has proved financially remunerative, it has not, in your opinion, been found satisfactory in other respects.

38. The Inspector General reports that this subject also was referred to him by your orders, and he has submitted proposals for a satisfactory management of this branch of the Forest Revenue in Oudh. On this matter also an expression of your views will be awaited, before further orders are passed.

39. The financial results of the year under review have been less favorable than those of 1866-67 :—

Receipts	Rs.	66,453
Charges	„	93,633
Excess of charges	Rs.	27,180

40. This, however, is counterbalanced by an increase in the value of stock from Rs. 17,641, less Rs. 8,989*, or Rs. 8,652, to Rs. 64,587 at the close of the year, placing Rs. 55,915 in favor of the year.

41. These figures appear to be correct. Rs. 64,587, entered as value of stock at the close of the year, apparently is the difference between value of

4,015† logs and 756 sleepers, estimated at ...	Rs.	1,89,288
and the amount paid on part of this timber by purchasers	„	1,24,701
Difference	Rs.	64,587

On the other hand, there has been a small decrease of outstandings from Rs. 23,551 to Rs. 21,326 at the close, placing a sum of Rs. 2,225 against the year.

The result would appear to be—

Increased value of stock	Rs.	55,915
Deduct diminished value of outstandings	„	2,225
Difference	„	53,690
Deduct excess charges	„	27,180
In favor of the year	Rs.	26,510

42. In last year's Report the cash surplus at the end of the first 5½ years of the existence of the Oudh Forest Department was shown to be Rs. 1,95,793; this year's deficit diminishes this surplus to Rs. 1,68,613, but there is a value of stock of Rs. 64,587, and outstandings at the nominal value of Rs. 21,326, which should be added to the above, to exhibit the financial result of Forest management in Oudh from 1st October 1861 to 1st April 1868.

43. The real value of the outstandings, however, appears doubtful. In para. 101 of his Report the Conservator states, that he thinks it almost impossible to recover the money.

44. In the orders on last year's Report, it was remarked that the outstandings by contractors were still heavy, and out of all proportion to the value of the transactions, and the system should, as soon as possible, be modified. His Excellency in Council desires again to invite your attention to this remark.

* This is the amount payable on timber sold, the purchase-money of which was credited during 1866-67.
† Should apparently be 3,995 logs.

45. It remains now to notice a few formal matters.

In para. 22 of the review of the report for 1866-67, attention was drawn to certain discrepancies between a statement in that report, exhibiting the financial results of the Department from the beginning, and a similar statement in Dr. Cleghorn's memo. on the report for 1865-66.

In paras. 88 to 90, Captain Wood explains that the statement entered in last year's report was correct, and shows how the errors arose in the previous statement. This explanation, he states, accompanied the report for 1866-67, but was not submitted to the Government of India.

It was also said (in para. 20 of the order on the report for 1866-67) that the figures of statement 28 (Annual Account of Forest Revenue) did not correspond with those of the other returns. This discrepancy is now explained, and it is stated that the Accountant General, to whom the Financial returns of the report for 1866-67 were referred, altered the figures of Return 22, without making the same alterations in Return 28.

46. The financial and timber transactions of the Department are clearly set forth in six returns.

No. 21. Summary of Receipts and Expenditure.

No. 22. Annual cash account. Here receipts and charges are detailed under budget headings, which is not required.

No. 23. Return of outstandings and liabilities. The figures in the first part of this statement were not properly arranged; this and a clerical error have been corrected.

In the second part 4,015, instead of 3,995, Sâl logs are entered as on hand at the close of the year. The inclusion in stock in hand of timber sold but not yet removed, and the subsequent deduction from the value of this stock of the amount paid by purchasers, is inconvenient, though the results may be correct. When the number of sale depôts has been diminished, and the whole timber business more consolidated, these returns will probably be simplified.

No. 25. Annual timber account.

No. 26. Amounts realized on account of timber sold.

No. 28. Annual account of forest revenue.

No. 27 is blank, and 24 has nominal entries only; both may apparently be omitted in Oudh at present.

47. The report itself might be more concise, and it appears time now to adopt in Oudh a more rational arrangement of the subjects treated in annual reports.

The Conservator's attention should be directed to a memorandum by the Inspector General, on the arrangement of subjects in Annual Forest Reports, which was lately circulated by the Government of India (Public Works Department Circular No. 18F, dated 4th November 1868.)

48.. The report, with the statements and part of the appendix, your review, and the present orders, with the map of the Oudh Forests, will be circulated as a re-print from the records of the Government of India.

49. With the report it appears useful to include the following documents:—

1. A report by Dr. Brandis on the management of the Oudh Forests, dated 23rd June 1863, with the Chief Commissioner's reply in a letter to the Government of India, No. 1039, dated 1st September 1863.

2. Two joint memoranda of 29th September and 1st October 1868, by Inspector General of Forests and Conservator, on the export of timber and plan of operations, with the Chief Commissioner's orders on these proposals.

3. The Inspector General's memorandum on the arrangement of Forest reports.

No. 396-7.

Copy to Home and Foreign Departments for information.

Dated 23rd June 1863.

From—Dr. D. Brandis, *Conservator of Forests, on Special Duty,*

To—*The Secretary to the Chief Commissioner of Oudh.*

I have now the honor to report, for the Chief Commissioner's information, the results of my enquiries regarding the Oudh Forests.

2. In a separate paper I have discussed the financial results of Forest management in Oudh since Mr. Read's appointment, and have suggested a system of accounts, which I trust will meet with the Chief Commissioner's approval; and I beg now to submit my views on the general state of the Forests as far as examined by me, the rules which should guide the Conservator in the selection of the trees to be felled, and the supply which may be expected from these Forest tracts during the next few years under conservancy management.

3. I shall further propose a few suggestions regarding the working of the Forests and the disposal of the timber, as well as conservancy and improvement of the Forests.

4. In conclusion, I shall submit some remarks regarding the size of the reserved Forest tracts, the Forest rules, and certain other matters of a general character.

5. When leaving the Chief Commissioner's Camp in April last, Mr. Wingfield requested me particularly to report on two points, *viz.*, the extent to which the working of the Forests should be restricted, and Mr. Read's plan of building a bridge of boats over the Sardah river. You will find my report on these points in the following pages:—

Remarks on State of Forests.

The general results of my examination of the Forests may be stated as follow:—

6. The total area examined by me in company with Mr. Read in Oudh was 204 acres. On this area were found first class trees in girth above 6 feet, 703; second class in girth above 4 feet 6 inches, 1,190; third class above 1 foot 6 inches, 6,955; fourth class below 1 foot 6 inches, 5,645. This gives first class trees per acre 3·3, and per square mile 2,205.

7. The Forests producing Sál between the Sardah and Korially rivers, which have been surveyed and demarcated, contain upwards of 150 square miles. Mr. Read thinks that the tracts, jointly examined by us, are a good average specimen of this division of the Oudh Forests. Assuming, then, that the whole of these 150 square miles contain first class trees at the above rate, there would be, between the Sardah and Korially rivers, 3,30,750 first class trees.

8. The number of second class trees counted was 1,190. This would give for 150 square miles upwards of 5,59,500 trees in girth between 4 feet 6 inches and 6 feet.

9. The question now is, how many years will a tree of the second class require, in order to attain the size of a first class tree? It is evident that in these Forests, where the second class trees are equal in number to those of the first, the whole of the first class trees may be removed within the time required, to bring the trees of the second class to the standard of the first.

10. But our knowledge of the rate of growth of Sâl is as yet imperfect. The concentric rings in the wood are frequently very indistinct, and it is doubtful whether they always correspond to one year's growth.

11. It may in a question of such paramount importance interest the Chief Commissioner to have on record the principal data at our disposal for determining the rate of growth of Sâl. The following trees were measured by myself. With the exception of the trees in the Kotree Doon Forests, where the concentric rings were assumed to indicate the age, the year when the trees were planted was ascertained from reliable information. The girth was measured at 6 feet above the ground :—

Age.	Girth.		Locality.
Years.	Feet	Inches.	
13	2	3	This is the average size of 33 trees measured in the Saharunpore Gardens.
25	5	9	Garden near Calcutta.
30	4	6½	Saharunpore Garden.
35	6	7½	Ditto.
50	3	0	On the slope of a hill in the Kosilla Valley, Kumaon, at an elevation of about 1,500 feet; average of 20 trees measured.
162	8	2	At 2,500 feet elevation in the Kotree Doon Forests, Gurhwal; average of two trees measured.

12. These data do not justify our accepting for the Oudh Forests the figures of the Saharunpore and Calcutta Gardens, for, independently of cultivation and irrigation, there is the absence of all jungle fires. But, on the other hand, it would not be right to assume for the Forests in the plains a rate of growth as slow as that on the hills.

13. As a medium rate, the following might be adopted until more complete observations are available :—

Age	15	years,	girth	18	inches,	1	foot	6	inches.
„	50	„	„	54	„	4	feet	6	„
„	80	„	„	72	„	6	„	0	„
„	150	„	„	108	„	9	„	0	„

This would give 30 years for a tree of the second class to attain first class size, and this would justify the removal within 30 years of the whole of the trees now composing the first class. But to be on the safe side, it may be as well to substitute 40 instead of 30. This would give an annual out-turn of 8,000 first class trees.

14. When the contents and productive qualities of the whole of these Forests shall have been sufficiently explored, then they should be divided in 10 sections, to be worked in rotation, so that the whole yield of 8,000 trees is in one year removed from one section only.

15. But our knowledge of the Forests is at present too incomplete to venture upon the formation of 10 compartments, all about the same productive power. At the same time, the above estimate of the number of first class trees in the Forests is only a very rough and uncertain one.

16. As a temporary measure, therefore, until the Forests shall be better known, I would propose the following rules;—

RULES FOR SELECTING TREES TO BE FELLED.

17. The felling of timber in the Forests between Sardah and Korially to be restricted to 1,000 trees per annum, provided this number can be selected from among the first class trees, standing on an area not exceeding 10 square miles. The felling operations to proceed from west to east, and the Forest tract where the work is done to be well defined.

18. In no instance more than one is four first class trees to be felled, and no trees to be felled on the edge of a vacant space, or where trees stand far apart.

19. These rules will probably be found to restrict the felling of large trees more than is absolutely requisite for the welfare of the Forests; indeed, in many localities where the number of second class trees is very large, it may be desirable to remove the whole of the first class trees, but until more complete experience is gained, it is as well to be entirely on the safe side.

20. Some places were found, in our examination of that part of the Forest which is situated near Newal Khar, where more trees had been felled on a given area than was good for the maintenance of the Forest; such instances will be avoided by the introduction of the above rules.

SUPPLY OF TIMBER EXPECTED FROM THE FORESTS.

21. This arrangement provides for a supply, from the western part of the Forests alone, of 200,000 cubic feet, or 4,000 tons per annum, on the assumption that one tree will, on an average, yield one ton or 50 cubic feet of timber. The cost of felling, cutting, and removal to the depôt will, at 4 annas per cubic foot, be Rs. 50,000, and the amount likely to be realized by sale should certainly not be less than Rs. 1,00,000, leaving Rs. 50,000 to cover survey, conservancy charges, and the cost of Establishments. In the Budget for 1863-64, these charges are estimated at Rs. 24,000, but even should they reach a higher figure, there would be a margin for a small surplus of revenue, independent of the revenue arising from grazing dues, Forest produce, and the timber of the Forests east of the Korially river.

22. Under these circumstances, I would not now recommend to raise the timber expenses proposed for the next few years beyond Rs. 50,000. I mention this with reference to the Chief Commissioner's question, whether the Forests require rest, and whether it would be prudent to restrict the outlay on timber operations for the year 1863-64 to Rs. 50,000.

23. A judicious selection of trees to be felled is the ground-work of all Forest conservancy. A limited number having been fixed to be felled annually, I consider that the Head of the Department should personally superintend the selection, and that all trees should be marked for felling in his presence. I have pointed out to Mr. Read the main points to be attended to, and he fully comprehends the importance of the operation, and the principles which should guide the selection.

24. All this refers merely to those Forest tracts the demarcation and mapping of which have been completed. Those beyond the Korially river, Mr. Read thinks may be more extensive than those to the west of it, but being more conveniently situated for the removal of timber, the number of first class trees left standing in them is supposed to be very much smaller. Mr. Read gives it as his opinion that the tracts east of the Korially will not yield one-fourth the number of first class trees, as compared with the tracts situated to the west of that river.

25. From the preceding remarks, the importance of the Forest Survey proper, in addition to the Topographical Survey, will be apparent.

26. In order to determine the rules for the selection of trees in a given Forest tract, the proportion of the trees of different classes on a given area, the soil, general growth of trees, and other circumstances of the Forest, must be known.

27. Mr. Read has joined me in my late Forest Surveys, and we have, in a preliminary way, determined upon the best mode for adapting the practice of the Survey to the peculiar character of the Oudh Sâl Forests. I am happy to mention here that, before meeting me, Mr. Read contemplated making an attempt to arrive at the same results by surveying limited areas of average quality in different parts of the Forests, a plan well suited for a certain class of Forests.

28. It would be an advantage if the Conservator of Forests would attach to his Annual Report an abstract statement of the Forest Surveys proper made by him during the year, adding remarks on the general results arrived at by him. Several months during the dry season may advantageously be devoted to this work every year, for it is not sufficient to survey each Forest tract once for the purpose of determining its resources, and the best plan for working it; every tract which is under the operation of the axe must be surveyed from time to time, say, once in ten years, to ascertain whether any deterioration in its timber resources has taken place.

Working of the Forests.

29. Regarding the working of the Forests, that is, the felling, sawing, and transporting of timber, I have only to say that the arrangements made by Mr. Read, as far as I had an opportunity of becoming acquainted with them, appear to me quite satisfactory. The trees examined by me had been felled as close to the ground as practicable under the circumstances. The logs were sound and of good size, and the sawn timber was as well turned out as can be expected to be done in the Forests. The sleepers are nearly all of the large size, 12 inches × 6 inches, and are cut of perfectly sound timber. In the cutting of these sleepers there must necessarily have been great waste, but considering that the East Indian Railway insists on the large size, and is expected to reject all that are not perfectly sound, great waste of timber is unavoidable, if sleepers are to be cut at all. The average size of the logs brought out in 1861-62 was 42·84 cubic feet. This year's round timber will probably measure between 50 and 60 cubic feet on an average. But I measured many logs at the ghât, and on their way to it, of much larger size. I will mention a few of the largest—

		Feet	Inches.		Feet.
In Forest,	Girth	6	3	Length	32
	"	6	2	"	33
On their way out	"	8	9	"	30
	"	8	9	"	27
Depôt, East	"	7	8	"	25
Bank of Sardah	"	6	9	"	30

Upwards of 450 logs had, at the time of our visit (27th April), been collected at the Depôt on the east bank of the river, and several thousand sleepers.

There is only one point which I wish to bring prominently to the Chief Commissioner's notice. I think that every exertion should be used to reduce the amount of advances made every year to contractors.

30. The rates which Mr. Read pays are 10 annas and upwards for felling, according to the size of the tree; Rs. 6-8 and upwards for carting from the Forests to the Depôt on the east bank of the Sardah river. The distance from the Forests now worked to that Depôt is from 20 to 30 miles, and the carting commonly takes eight days.

31. From this Depôt (Koogria Ghât) the timber has to be crossed the river, and floated down to Guttia Ghât, which is about five miles lower down. This can only be done during the rains, and it involves delay, risk, and an expense at the rate of Rs. 2 per log, and a proportional rate for sleepers. This rate includes the cost of launching, rafting, boat-hire, floating, and hauling up on the bank at Guttia Ghât, as well as 5 annas per log paid as compensation to the owners of the Ferry at that point.

32. All this Mr. Read proposes to do away, by having a bridge of boats across the Sardah at a convenient point near Guttia Ghât. The carts will then, without unloading, cross the river, and at once deposit the timber at a suitable place, which is to be selected on the west bank on high ground.

33. Mr. Read estimates the cost of putting up this bridge at Rs. 10,000, (including approaches,) and the annual cost of maintenance at Rs. 4,000,—Rs. 2,000 of which are to be paid as compensation to the owners of the Ferry.

34. This outlay and the maintenance charges he expects to cover by the saving in the transport of 3,000 logs annually, which will amount, according to the data given above, to Rs. 6,000. And in addition to this there will be the amount expected to be realized by way of Ferry money, which Mr. Read expects will be very considerable,—"*certainly* not less than the amount paid *as compensation* to the proprietors of the Ferry."

35. The only objection that can be raised against this plan is, that purchasers may occasionally find it more profitable to float the timber bought by them at the Government sales down the Sardah river to Byram Ghât, than to cart it across to the Kunhout Nuddee in the Pelebheet District, and thence floating it down to the Ganges, which I understand to be the customary route at present. Mr. Read estimates the relative distance of these two routes to Cawnpore as follows:—

I. Kunhout Route.

	Miles.
Land-carriage from Guttia Ghât to Kunhout Nuddee	25
Water-carriage down that Nuddee	100
Ditto ditto the Ganges to Cawnpore	80
Total ...	205

II. Byram Ghat Route.

	Miles.
Water-carriage down the Sardah to Byram Ghât, about	173
Land-carriage *viâ* Lucknow to Cawnpore	90
Total ...	263

If, therefore, Cawnpore is the principal timber mart to look to, the south-west route would be shorter, and entail less land-carriage.

36. But there are other timber marts to be supplied besides Cawnpore, and it is certain that, as a rule, there will be a greater demand for timber to the westward than to the east.

37. To the east there are the rich Sâl Forests of the Terai ceded to Nepal, which have their principal outlet down the Korially and Sardah rivers, and which, considering the very large scale on which they are worked at present, must have a depressing influence on the timber prices at Byram Ghât. To the west it is true the Nepal Forests near the Sardah have outlets below Burmdeo, but these are not at present used to the same extent as the Forests to the east, and the Kumaon and Gurhwal and Dehra Doon Forests are not likely, for some years to come, to yield any very large quantities of Sâl timber. Moreover, the eastern part of the Oudh Forests must find its outlet down stream to the east, and it seems therefore right for the western portion to look for an outlet in the opposite direction.

38. Still the fact must not be lost sight of, that the purchaser of last year's timber was floating a portion of it down the Sardah river to Byram Ghât, when we were at the Depôt in April last. But Mr. Read thinks that this was only an accidental speculation, and one not likely to be repeated, and, from general grounds, I am inclined to concur with him.

39. As far, therefore, as I understand the position of affairs, I am inclined to advocate the building of the bridge as soon as possible. The revenue of 1863-64 is estimated to be in excess of the expenditure by Rs. 33,000, so that the expenditure during the current year of the sum required does not appear unreasonable.

40. These remarks dispose of the second point, regarding which the Chief Commissioner required my special report.

Disposal of Timber.

41. *Timber Sales.*—Mr. Read reports that, owing to the late fall in the price of timber, he thought it preferable not to hold any auction sale in 1862-63, but to sell the whole of the round and square timber, including sleepers, to one purchaser who had made a tender of 8 annas per cubic foot all round.

42. Circumstances must, in matters of this kind, guide the Forest Officer; but I would suggest that, in the current year, an attempt be made, without fail, to sell the timber which is now coming out by public auction, at a convenient locality, in convenient lots, and at an upset price. The sale should be held at a suitable time of the year, and public notice should be given early in the season.

43. I think the advantages of a public sale are so great that, even if not successful at first, the attempt should be repeated for the next two or three years.

44. Should it, however, be found that bidders do not sufficiently come forward, then another plan might be tried, *viz.*, to divide the timber into suitable lots, and to invite purchasers to tender either for each lot separately, or for the whole. Selections might occasionally be permitted; but then the price fixed for picked timber should be at least twice the average value of the whole timber at the Depôt.

45. But the selection of a conveniently situated place of sale is a point of the utmost importance. The Kumaon timber is sold at Kashipore, and at that place, only about 92 miles to the north-west of Guttia Ghât, round timber, smaller, and in quality inferior to the logs brought out by Mr. Read, is reported to command 1 Re. per cubic foot.

46. I would suggest that, on completion of the bridge, the Depôt be moved a considerable distance westward of the Sardah river, say, to the banks of the Kunhout Nuddee, or to any other place where mangoe groves, like that at Kashipore, would be available for keeping the timber protected from the sun.

47. The objection that this would locate the Depôt in the Rohilkund District applies equally to the present Depôt at Guttia Ghat, and is really not of much consequence. And with a bridge to cross the Sardah river in the carting season, there would probably be no necessity for two separate contracts, the same parties would possibly convey the timber from the Forests to the Depôt.

Disposal of Railway Sleepers.

48. *Sleepers.*—There were, when I visited the Guttia Ghât Depôt, 6,544 sleepers of 5 cubic feet each at the Depôt, and Mr. Read expected 8,000 more from the Forests of season 1862-63. As mentioned above, these sleepers are of excellent quality, almost all perfectly sound, and far superior to any railway sleepers I have seen in the North-West. I understand that there has been a lengthened correspondence on the subject of the sale of these sleepers with the East Indian Railway Company, but that this correspondence has not resulted in any definite arrangement.

49. From all I have been able to ascertain, I am inclined to believe that it is at present more advantageous, both for the Forests and the Railway, to sell railway sleepers by public auction or otherwise to third parties, who carry them to the line and sell them to the Railway on the spot where they are wanted. I understand that Colonel Ramsay, in Kumaon, sells sleepers measuring 5 cubic feet by public auction at Rs. 3 all round or more; whereas, if he sells direct to the Railway, the proportion of rejections is usually so large that the average amount realized does not much exceed Rs. 2. Nor do I think that the Railway would gain materially by these direct sales if they had to pay the full market price for the timber. They have to entertain expensive establishments for the selection of sleepers at Forest Depôts, and it is quite possible that the cost to them of the transport of the sleepers to the line by their Agents would leave a fair margin of profit to contractors, who would purchase the sleepers at Forest Depôts, and convey them to the line on their own account.

50. The only danger of this plan might be, that large contractors might occasionally combine and keep back their sleepers, and thus raise the price. But the loss of interest on the stock in their hands, and the deterioration of sleepers, if kept, by cracking and splitting, will probably prevent this practice becoming general.

51. I do not say that, under different circumstances, direct dealings with the Railway might not prove advantageous to the Forests. The building of the new sanctioned lines in Rohilkund and other parts will create competition, and thus considerably alter the aspect of affairs. But I would not advise any extensive sleeper-cutting operations in the Oudh Forests, unless, indeed, a much higher rate than 8 annas per cubic foot for this class of timber could be confidently expected.

52. The Bengal, Bombay, and Punjab Railways are, as far as I understand, satisfied with the smaller class of sleepers (10′ × 10″ × 5″), measuring 3·4 cubic feet only. But the North-West branch of the East Indian Railway seems to be determined to use only the large kind, 10′ × 12″ × 6″, measuring 5 cubic feet, which is singularly unfortunate in a country where good timber has to be husbanded, and is not very plentiful. Of this kind, a log 6 feet in girth will, as a rule, only yield two or three sleepers, side by side, from a 10-foot section; all the rest is waste. The principal reason is that the centre piece has, in most cases, to be cut out, because it is unsound. Of the smaller kind, a log with the same girth will yield from 4 to 6 sleepers, side by side, from a 10-foot section, and there will, consequently, be much less waste. I would therefore certainly recommend that only the smaller sized sleepers be cut in the Oudh Forests, and these only, if a rate per cubic foot could be obtained higher than the rate

which round logs will fetch. From many parts of the Kumaon and Gurhwal Forests, it would be impracticable to bring out timber in any other shape than sleepers, kurries, or planks; but this is not the case in Oudh, except, perhaps, beyond the Raptee, where the Sâl Forests are said to extend into the hills. In the tracts between the Sardah and Korially rivers, there is no obstacle to carting away the whole of the timber in the shape of round logs.

53. From Mr. Read's Annual Account, dated 1st October 1862, it appears that while the working charges for round logs had been, up to that date, at the rate of 3 annas per cubic foot, sleepers and other squared timber cost annas 4-3.

54. To this must, in both instances, be added the following rate for Establishment and general charges:—

Total expenditure to October 1862 ...	...	... Rs. 36,279
Less working charges ...	...	... „ 23,618
Establishment and general charges	...	... „ 12,661

which, calculated on 113,000 cubic feet of timber, is annas 1-9 per cubic foot, thus making the cost to the Department in 1862-63, of round timber, annas 4-9; square, annas 5-12. And, as shown above, a tree may yield 50 cubic feet if brought out round, but perhaps only one-half or two-thirds of this amount if cut up into sleepers.

Disposal of Tops, Branches, and old Dead Timber in the Forests.

55. *Tops and branches of Trees.*—It is very desirable that these should be utilized. In some instances it may be possible advantageously to cut kurries and other scantling. But I suppose that, generally, the most economical plan will be, in the year when timber is cut, or in the year following, to sell the permission to remove these pieces from a certain Forest District; this permission to hold good only for a year, and to expire on a certain fixed date.

Old, Felled, Dead, and Ringed Trees.

56. There is a considerable number of these in the Forests; they might be disposed of on the same plan, at a certain rate per tree or log. Indeed, Mr. Read has already, in one instance, concluded an arrangement of this nature. I heard of his having done so at Lucknow from Native timber merchants, and when I met Mr. Read he explained the circumstances.

57. The protection against unauthorized felling in this instance, and in the case of tops and branches, is possible, if the permission is given while the timber operations are in progress in the same or in an adjoining district, for these will always require supervision by Forest subordinates. In the case of old, felled, and dead trees, an additional security against the felling of green trees lies in the fact that the timber sold is dry. Care must, in all instances, be taken to grant permission for one particular route, or certain Ghâts only, and the logs or pieces should, before leaving the Ghât, be stamped with a marking hammer.

58. Another plan is recommended by Mr. Read as preferable to the plan above proposed. This is to allow the Forest Department to bring out of the Forests all timber such as old logs, branches capable of being utilized, &c., to some open space in the immediate vicinity of the tract, and dispose of it as occasion may offer. The outlay would be small, and the object gained. I think that in certain cases the first, in others the second, plan might be adopted.

Marking Hammers.

59. I have recommended to Mr. Read the systematic use of marking hammers. All logs and pieces sold by him should be marked when finally paid for, and all trees selected for felling should be marked with a separate brand struck on a flat surface cut into the heart-wood of the tree at 6 feet off the ground.

Where the Nepal Forests are contiguous to those in the British territory, it may be advisable, in addition to the above stamp, to mark every log before it leaves the Forest along its whole length.

CONSERVANCY AND IMPROVEMENT OF THE FORESTS. FOREST RULES.

60. Mr. Read thinks the Forest Rules are, upon the whole, well observed, and he states that in his magisterial capacity he has not had any occasion to punish offences against them. Regarding the framing of the rules themselves, I would observe that, after discussing the subject with the Chief Commissioner and the Judicial Commissioner, it appears to me that the rules are more of the nature of a proclamation, notifying to the inhabitants that by committing certain acts they will render themselves liable to punishment under the Penal Code. No Magistrate could lawfully inflict any punishment, because it was prescribed by these rules.

Rule III.—Any person or persons removing from the Oudh Forest tracts Sál, Sissoo, or Toon, without the written authority of the Superintendent of Oudh Forests, will, on conviction, be subject to a fine not exceeding Rs. 200, and for all subsequent offences, to a fine not exceeding Rs. 500, with imprisonment not exceeding one year.

61. The third clause should therefore not provide for a special penalty, but should, like the others, merely refer to the appropriate Section of the Code.

FIRES.

62. Mr. Read lays great stress on the necessity of preventing the spread of fires in the Forests, and I fully concur with him in his views. Having the control of the farming of the grazing dues in the Khyreeghur District, he hopes to be able greatly to diminish the fires, by stipulating in the agreement with the farmer that he is not to burn the grass as hitherto customary. The practice of burning the high grass on the pasture lands outside the Forests is, Mr. Read thinks, the main source of the fires. This arrangement will of course considerably diminish the yield of grazing dues, which in that district amount to Rs. 5,000 per annum, and it may compel the owners of cattle in the British territory to seek grazing ground in the Nepal Terai, beyond the Mohan river, but the loss of revenue will be amply repaid by the improvement of the Forests.

63. The injury done by fire in these Forests may be defined as follows:—

1st.—It impoverishes the soil by the destruction of the organic matter produced by the Forests, *viz.*, leaves, grass, and brushwood. Only the roots remain to improve the soil. Almost the whole of the ashes is washed away with the first shower of rain.

2nd.—The top shoots of young trees are destroyed, and often young trees are killed down to the root. The dead portion of the stem is then usually surrounded by fresh wood, which, however, does not form an organic connection with the dead part. A cavity is thus formed near the centre of the young stem, and in this the sap from the adjoining tubes and cells collects, and fermentation and decay ensue, which progress upwards, thus giving rise to unsoundness in the heart of the tree.

64. Or the stem is not burnt to the ground, but the top shoot is killed. The injured part gives rise to unsoundness in the stem, moisture collecting there during the rains. One of the side branches takes the lead, and at this point a knot of small branches is formed, and the shape of the stem becomes irregular. In going through the Forests, we often observed on young trees a large number of these knots, indicating how often they had been burnt.

3rd.—The fires scorch leaves and young branches, and thereby impede the growth of the tree.

4th.—Fires deprive the ground of its covering stratum of leaves, &c., which retains the rain, causes it to filter into the ground, and

generally keeps the ground moist. On hills and undulating ground especially, the absence of this covering stratum causes excessive drought, the rain running off the ground as soon as it falls, and in addition washing away a large portion of the surface soil, when this is not protected by a matting of grass.

Creepers.

65. The second great evil in these Forests are the creepers, which, as Mr. Read very correctly observes in the report for 1861-62, threaten to throttle two-thirds of the trees long before they reach the minimum size for felling. In two tracts examined by us, the proportion of creepers to the trees of the two first classes was as follows :—

First.	Second.	Creepers.	Area in Acres.
144	347	442	61·5
216	322	1,980	61·5

This gives 12,800 creepers to the square mile.

In other tracts the numbers are less, only 5,760 creepers per square mile.

66. There should, I consider, be no delay in clearing away the whole of the creepers which infest Sâl trees in the tracts demarcated and surveyed west of the Korially river. To prevent injury by fire, the stem of the creeper should be cut through in two places, and the pieces cut out thrown away. One man may do from 100 to 200 creepers per diem. This would, assuming an average rate of 10,000 creepers per square mile, require from 50 to 100 men, or with superintendence from Rs. 10 to 20 per square mile. Mr. Read reports that as an experiment a small area has been cleared at the rate of Rs. 8-7 per square mile, but the stem of the creeper was here only cut through, without cutting out a piece. On the outside, therefore, the cost would only be Rs. 3,000 for the 150 square miles of Sâl Forest, west of the Korially river. This outlay will repay itself a hundred-fold by the increased production of timber on that area, and the improved stature of the stems. Unsoundness and irregularity in the shape of the stem in these Forests arises almost exclusively from the causes just noted—*fires* and *creepers*.

Thinning.

67. In some parts of the Forests examined by us, the second class and third class trees were found to stand so close in certain localities, that they urgently required thinning. A careful observation of the character of the Forests will at once show where thinning operations are called for. Wherever the trees, standing on the edge of the Forest, show, on similar soil, a much more healthy appearance, or where the branches of neighbouring trees touch or nearly touch each other, in such places the Forests will be benefited by the judicious removal of a number. The rule is to remove those trees which are weaker, smaller, and less vigorous.

68. The only difficulty will be to effect this operation without undue expense. Second class trees, that is, in girth from 4 feet 6 inches to 6 feet, unless thrown into the market in very large quantities at one time, will always sell sufficiently well to cover the expense of selecting and cutting them. Third class trees, or in girth from 1 foot 6 inches to 4 feet 6 inches, can probably only be disposed of to the neighbouring villages for the making of cow-sheds and railings round their fields. If the principle is maintained, that every tree to be felled, whether for the yield of timber or in the course of thinning operations, is to be marked by a responsible officer of the Department, then it may be possible to allow the villagers to cut and remove all small thinnings themselves without payment. But this proceeding will require great care on the part of the Conservator.

Note.—If it could be done without expense, the removal of all other trees but Sâl would serve much to improve the Forest.

Local Forest Establishment.

69. The only Establishment of this kind is what is called the Preventive Establishment. There are at present three stations, one is near the Nepal

boundary west of the Korially river, one at Muttiara Ghât on the Raptee, and one at Kheree Ghât on the Gogra. The total cost of this Establishment is Rs. 106 per month; there are three jemadars at an aggregate rate of Rs. 33; 14 peons at Rs. 73.

70. The duty of these people is to control the foreign timber imported from the Nepal territory by the Korially and Raptee rivers, and to watch over the observance of the Forest Rules in the Forests of the British territory.

71. I would not at present recommend any change in the organization of the Raptee and Gogra Establishments, but the station in the western Forests I would modify as follows:

72. There are now one jemadar on Rs. 15, and 5 peons on Rs. 5 each. As an experiment, I would recommend an addition of Rs. 25 for temporary Establishment, for the period of one year, under the following arrangement:

73. Four Forest watchers on Rs. 10 each to be in charge of four sub-divisions of these Forests, and to live in Forest villages suitably situated, if possible, to be taken from the villagers themselves. These people will be held responsible each for his own Forest. They will be required to serve as guides, and must therefore make themselves acquainted with every portion of the Forest. It will be their duty, twice a year, to go over the whole length of the boundaries of the Forest in their charge, to prevent and report unauthorized felling of wood, the grazing of cattle in the Forest, wherever this may be prohibited, and the firing of the grass. Each may have a Forest hammer, with which they should mark every log when it leaves the Forest.

74. To supervise and assist them, the jemadar on Rs. 15 with 2 peons should be retained.

75. Whenever a breach of the Forest Rules is committed, which is punishable under the Penal Code, it will be the duty of the jemadar to make the report to the nearest Magistrate, and himself to conduct the prosecution.

76. He will also have to prepare and despatch to the Conservator of Forests the monthly reports of the doings of the Forest watchers. To enable him to do this, he must make a round once a month, and visit every one of them.

77. With such an arrangement, the local Forest Establishment can be held strictly responsible for the Forests in their charge. Mr. Read thinks that the present Establishment cannot be held responsible,—that is, they cannot in fairness be punished for not having prevented or reported any breach of the Forest Rules, which may be discovered by the Conservator of Forests or other officers.

78. And ultimately this local Forest Establishment will be invaluable in assisting in the selection of the trees to be felled, in the thinning operations, and in the supervision of the cutting of creepers and other Forest work.

79. The jemadar must of course be able to read and write; the Forest watchers need not. The jemadar, for instance, would keep the register of trees marked for felling, trees girdled, trees felled in and removed from the Forest, and it would be his duty to see that the Forest watchers know these numbers, each for his own district. They will of course know them, as they will be present when the trees are marked, girdled, felled, and carted away.

The comparative cost of the old arrangement, and that here proposed, is as follows:—

	Rs.		Rs.
1 Jemadar	15	1 Jemadar	15
5 Peons	25	2 Peons	10
		4 Forest watchers	40
TOTAL Rs. ...	40	TOTAL Rs. ...	65

80. It may be possible to secure the services of villagers as Forest watchers for less than Rs. 10. But even at Rs. 10 per mensem, the additional expense of Rs. 300 per annum is small compared with the advantages to be secured.

81. A clear demarcation of compact blocks of Forest land, for the management of which certain officers are exclusively responsible; local Forest subordinates strictly responsible each for his own tract; and a regular system of selecting the trees for felling; these may be viewed as the three first great steps to be taken to ensure success in conservancy operations.

82. I would therefore entreat the Chief Commissioner to give the proposal for the Khyreeghur District a fair trial, say for two years, but I would not recommend an application for permanent Establishment to be made on that account.

Demarcation of Government Forests.

83. Regarding the demarcation of the Government Forest tracts, I have to report that I have carefully examined the maps of the same prepared by Captain Anderson. These comprise the tracts between the Sardah and Korially rivers.

84. I consider the plan pursued in demarcating and surveying these tracts a very good one. The maps furnish the exact shape and size of each Sâl-producing tract, and all the patches of grass land intervening between them. They also give some of the main water-courses, roads, and villages. But in this respect they are not, I believe, quite complete, and I think it would cause little additional labor and expense for the Surveys still to be executed, not to enter all fields, but merely to indicate lines of cart roads, nullahs, and sites of villages.

85. To illustrate the following remarks, I have prepared a rough abstract of Captain Anderson's map on a reduced scale.

86. But I consider that it would be a fatal mistake to include in the area to be made over to the Forest Officers for management, as Forest land, nothing but the ground actually covered with Sâl trees. If this plan were pursued, I fear the Forest Officers could not be held responsible for the due conservancy of the Forests in their charge, and the working of the Forests would, in many instances, be rendered unnecessarily expensive.

87. The Forest tracts surveyed and mapped form a belt about 30 miles long, and from 3 to 8 miles broad. The outlines are extremely irregular, and there are large open spaces covered with grass included in the Forest, and on all sides surrounded by it. The largest of these, the Soorma phanta, has an area of 11,067 acres, or 17 square miles. Another, the Moonorhun phanta, is larger still (33 square miles), but it is open to the north-west towards the Mohan river.

88. Besides this belt of irregular shape, and thus intersected by land not producing Forest, there are small isolated patches of Forest all around, and in the grassy plains just mentioned, the smallest of which has an area of two, and the largest of 493 acres.

89. Unless the Forest Department has some control over the land immediately surrounding these isolated tracts, it will be difficult to conserve and to work them. Fires and cattle could not be excluded, and supposing the surrounding country came into the possession of a European landholder, who insisted on his rights, it would be impossible to cart away timber by any but the established roads, which limitation might occasionally prove so expensive as to render the working of the Forest entirely unprofitable.

What I would propose is the following:—

90. The outside limits of the Forests on the south-west side are well defined towards the cultivated portion of the Khyreeghur District. Let this be the south-west boundary of the Forest, and mark it off with boundary pillars or posts, placed on the different roads where they enter the Forest. Towards the north and north-east let the land under control of the Forest Department go up to the Nepal boundary line. To the west it will be necessary to include the extensive Sissoo tracts west of Newal Khar, as far as they are Government property, and the access towards the Ghâts on the Sardah river should likewise be kept open. To the east, a line will have to be drawn from a point on the south-east boundary line of the Forest across to the Korially river, so as to give free access towards that river for the transport of timber, and to include the Sissoo tracts near its junction with the Mohan river.

91. It may be as well here to mention that the north-west limit of the Sâl Forests is distant 16 miles from the present Timber Depôt at Guttia Ghât, and that the distance of the south-east limit from the Ghât on the Mohan, near its junction with the Korially, is only about 9 miles.

92. At present the western portion of the Forest only has been worked, but when the time comes for taking in hand the eastern portion, the line towards Kakrowla Ghât, on the Mohan river, may become important for the transport of timber.

93. The area which will thus be included stands as follows:—

	Square miles.
Area surveyed, Sâl tracts	149·5
Phantas	80·05
Total area surveyed ...	229·55
Estimated unsurveyed area between the Forests and the Mohan river	40
Ditto to the east	60
Ditto to the west	40
Grand Total, say ...	370

of which 14·5 square miles are actually Sâl-producing, and perhaps about 30 square miles Sissoo-producing, tracts. On this land thus contemplated (with the exception of the villages), to be made over to the general control of the Forest Department, there are numerous villages; the maps indicate the position of 12, but there are many more, and the area actually cultivated must be very considerable.

94. No interference whatsoever with existing cultivation is contemplated, and all claims to any land, not at present under cultivation, should be enquired into and settled by the Revenue Settlement Officer, if brought forward up to a certain date. A regular settlement would have to be made as soon as possible, and the areas actually cultivated, and those awarded to claimants, should be marked off by poles, boundary stones, or boundary pillars.

95. The ground thus made over to the villagers should, as heretofore, be under the control of the Revenue Officers, the revenue should be collected by them and credited as land revenue; but the control of the grass lands and other waste lands, not included in the settlement, should rest entirely with the Forest Officers.

96. The farming out of the grazing rights rests already with the Superintendent of Forests. This is an important step, but the demarcation of the grazing lands belonging to the Talookdar of Khyreeghur will leave Mr. Read at liberty effectually to prevent the firing of the Forest grass lands, and thereby to protect the Forest.

97. It is here perhaps the place to allude to the question, whether the provisions of the Penal Code, under Section 435, might be held to prohibit the firing of private grass lands near Government Forests, if due notice was given that this practice would cause damage to public property, and that all persons setting fire to their grass under these circumstances would be prosecuted. If the provisions of the Penal Code could be held to extend thus far as to stop this old established practice, which is considered essential to make good pasturage, this would greatly facilitate Forest conservancy in these and other parts of India. But I do not feel myself competent to offer an opinion as to the legality of this measure.

98. Should it be found desirable to let out for cultivation any ground in the lands placed under the management of the Forest Officers, short leases might be given by the Forest Officer, or, at his requisition, by the District Officer, under such conditions as may hereafter be fixed. But grants under the Waste Land Rules should, in my opinion, on no account be given in lands placed under the general control of the Forest Department.

99. There is no necessity, whatsoever, for locking up land, or restricting cultivation, but the officer responsible for the maintenance of the Forest must have a reasonable share in the control of the Government lands in the immediate vicinity of the Forests, whether actually covered with Forest or not.

100. But a portion of the land thus proposed to be made over to the Forest Officer can advantageously be converted into Sâl or Sissoo Forest by planting, and in case it should hereafter become necessary, ground should be available for the planting of Toon and other trees required for particular purposes.

101. There are many parts contiguous to the Sâl Forests where isolated Sâl trees are found, which sufficiently indicate that the tree would thrive in those localities.

102. In demarcating and surveying the Forests still remaining beyond the Korially river, I would recommend that precisely the same plan be followed as hitherto, except that, if possible, in the maps more detail might be given. After the maps are completed, it would have to be decided how to define the ground to be retained as State Forest Domains.

Sissoo Tracts.

103. *Sissoo and Toon plantations.*—Of the miscellaneous matters which I have reserved for the close of this letter, the first refers to the Sissoo-producing tracts in Oudh. On my tour I had only an opportunity of seeing a small part of them near Newal Khar. Here I examined, in company with Mr. Read, an area of 62 acres, containing 175 first, 352 second, and 418 third class trees, and another area of 25 acres covered with Forest of a poorer description. The first figures indicate a very fair timber production per acre, and the large number of stumps observed on the same ground (716) shows that the Forest must have been even better formerly; but the size and growth of the first class trees were not good. We found very few trees in girth above 7 feet, and the stems were crooked, and few of them more than 12 feet long. Another indication of this locality not being very favorable for the growth of the trees was, that most of the large trees had numerous dry branches, in some instances a large portion of the tree was dead, and not less than 439 dead and fallen trees were counted by us. In some Sissoo tracts, which I have examined in other parts, the trees are not permitted to attain any large size, because the river, in periodically changing its course, sweeps away the older parts of this Forest, while new Forest is springing up on the banks formed every year.

104. This, however, was not the case near Newal Khar, and the only apparent cause of this unfavorable state of things in a Forest so well stocked is poor gravelly sub-soil, or a low situation of the ground exposing it to heavy inundations.

105. I only mention this Forest to show that all Sissoo localities are not equally valuable. But I have seen excellent Sissoo localities north of the Mohan river, in the Terai, ceded to Nepal, and understand that there are tracts equally good in other parts of Oudh, particularly east of the Korially river, although, perhaps, they have been worked to a greater extent than those of Nepal.

106. Sissoo is known to be a remarkably fast-growing tree. On the banks of the Eastern Jumna Canal I have measured the following specimens :—

Age.	Girth at 5 feet above ground	Cubic contents of tree.	Locality.
35 years	5 feet 11 inches.	92 cubic feet.	Near the Khulsea Chowkie.
Ditto	5 „ 3 „	67 „	
Ditto	5 „ 4½ „	72 „	
Doubtful, 30 years	4 „ 8 „	45 „	Average of 4 trees.
Ditto ditto	4 „ 9 „	47 „	„ 5 „
Ditto ditto	4 „ 5 „	38 „	„ 5 „

The last 14 trees were measured on an average part of the avenue from Khulsea to Behut.

107. In the Saharunpore and Calcutta Gardens, Sissoo trees attain this size in a much shorter time, but I have purposely omitted these data. But I think it may be assumed that, if Sâl will form a girth of 6 feet in 80 years, Sissoo will require only 50 or 60.

108. Associating with this the great value of the wood, and the facility with which young trees spring up, it appears well worth while to devote great attention to the Sissoo Forests of Oudh.

109. They might be managed under a system similar to that here proposed for Sâl, but under a proportionally shorter rotation. Such first class trees as may be felled according to the working plan, should be cut and collected at the Depôts for sale, notice being given to the Gun Carriage Agency whenever a considerable quantity is collected, so as to enable them to pick out the logs required by them. The remainder, together with such Sissoo timber as does not appear suitable for Gun Carriage purposes, to be sold to other parties. This would, I believe, be carrying out the orders of Government of the 11th July 1861.

110. The propriety of making plantations of Sissoo and Toon may also in time have to be considered. The rate of growth of the Toon tree appears to be even more rapid than that of Sissoo, if we may judge from the following figures obtained on the Eastern Jumna Canal, but Toon trees, to thrive well, appear to want a very rich soil :—

Age	Girth at 5 feet above ground.	Cubic contents of tree.	Locality.
35 years	7 feet 2½ inches.	105 cubic feet.	Near the Khulsea Chowkie.
Ditto	6 „ 1 „	82 „	
Ditto	7 „ 10 „	139 „	
Doubtful	11 „ 1½ „	300 „	
35 years	7 „ 6 „	127 „	
Ditto	7 „ 2 „	139 „	
30 years*	4 „ 10 „	43 „	Mean of 6 Toon trees measured on an average part of the Khulsea and Behut avenues.

* The age of the Behut avenue is either 30 years or less.

Toon, like Sissoo and Sâl, is protected in the Forest rules, but there is not, I believe, much of this in the Oudh Government Forests. Still I have seen some excellent specimens near the Mohan river.

Establishment.

111. The next point refers to the Establishment. The scale at present sanctioned stands as follows, as communicated to me by Mr. Read:—

Superintendent of Forests	Rs. 700 per mensem.	
Office Establishment		
Writer	60	
2 Moonshees	80	
Native Doctor	40	
1 Jemadar and 4 Chaprassees	32	
Total ...		212
Forest Establishment ...		106
Grand Total Rs. ...		1,018 per mensem,

or Rs. 12,216 per annum.

112. The necessity of a small increase of this Forest Establishment has been shown above.

Mr. Read thinks that the other Establishments also should be increased, considering that, under the arrangements here proposed for the working and the conservancy of the Forests, the work of the Department will considerably increase.

113. I so far concur with Mr. Read in thinking, that in order really to conserve and to improve the Forests and work them efficiently, much more work will have to be done in the Forest than is done at present, and in time an Assistant will be required; but I would suggest that this should be made the subject of a separate application to Government.

114. When the work has actually increased so as to make the necessity of the increase apparent, I should be much inclined to recommend that a trained Forester from Europe should be placed in charge of the Sâl Forests between the Sardah and Korially rivers. A man who has managed Forests at home on a regular system of rotation, will soon find himself at home in these very promising Forests, where almost the whole of the trees are Sâl, and he can, *mutatis mutandis*, apply the practice he has been trained to at home. Even Sâl does not often form Forests so pure, and consequently so easily managed on a regular system.

Conservator of Forests.

115. Regarding the Superintendent himself, I would recommend that his designation be changed to the more appropriate one of Conservator of Forests, Oudh, and that he be required to make Lucknow his head-quarters during part of the time when Forest work is stopped on account of the reputed unhealthiness of the Forests.

116. It is certainly very desirable that the Forest Officers in this country should have as much as possible an opportunity of recruiting their health on the hills, but the Conservator of Forests is subordinate to the Chief Commissioner, and must transact business with his Secretary. I do not see how this business can be transacted in a satisfactory manner without at least a few months' personal intercourse at head-quarters. If the plan were to be continued to make the Conservator subordinate to the Commissioner of the Khyrabad Division, Seetapore ought to be his head-quarters during a part of the recess, but I do not think the interposition of the Commissioner between the Chief Commissioner and the Conservator will result in much real good. The most suitable time for the Conservator's sojourn at Lucknow would appear to be before the commencement of the working season, when the Budget is prepared, and arrangements for the work of the season are made.

117. I wish here to mention that I have discussed with Mr. Read the several points set forth in this document, and among the rest I have informed him of this last proposal regarding his occasional residence at Lucknow. I think Mr. Read now fully understands the principles and practice of the Forest Survey, the rules for selecting the trees to be felled, and the nature of the measures proposed by me for the conservancy and improvement of the Forests. In many instances he has met my suggestions half-way, having evidently felt the necessity of similar measures, and devised plans for carrying them out. All that is now wanted is to let the work really commence.

CONCLUSION.

I beg now to solicit an expression of the Chief Commissioner's views on the different points discussed in this report, either in the shape of a letter to myself, or perhaps better in a report direct to Government; in which latter case, I would beg that a complete copy of this letter, with all annexures, be attached to the report. Should the Chief Commissioner wish to see me at Lucknow, to discuss any points which may not be sufficiently clear, I am ready to go as soon as I have completed my work in the North-Western Provinces.

No. 1039, dated 1st September 1868.

From—LIEUT. COL. J. E. T. NICOLLS, R. E., *Offg. Secy. to Chief Commr., Oudh, P. W. Dept.*,

To—*The Secy. to the Govt. of India, P. W. Dept.*

I am directed to forward to you the accompanying copy of a report submitted by Dr. Brandis, regarding the conservancy of the Oudh Forests. The principal features of Dr. Brandis's scheme are the same as those of the system now in force. The rotary system of felling, and sale of timber by auction, were the measures embraced in the Chief Commissioner's recommendation for assuming the direct management of the Forests in 1860. He does not, however, mean to say that the formation of compartments is perfect, and the statistics furnished by Dr. Brandis of the growth of Sâl trees form a valuable addition to our previous knowledge on the subject.

2. To elucidate the report, the Chief Commissioner divides the Forests in two main divisions; those stretching west of the Korially to the boundary of the North-Western Provinces, and those east of that river to the boundary of Goruckpore. The survey of the former has been completed, and that of the latter as far as Bhugora Tal, where the Nepal Terai begins. The survey of the remaining portion will be finished during this cold season.

3. It is enough therefore to say that the Chief Commissioner quite approves of the propositions made in paras. 14 to 28 of Dr. Brandis's report. He thinks that the annual number of Sâl trees felled should not exceed 4,000, for the market is now well supplied from the Forests recently ceded to Nepal, which are far richer and more extensive than those left to Oudh, and which are now being worked on a very large scale. Though we cannot safely reckon on obtaining more than 8 annas per cubic foot for timber, yet, at that price, the sale of 4,000 trees should cover all expenses of working, conservancy, and establishment, and leave a margin of profit.

4. *Para.* 30.—No doubt the system of advances to contractors for cutting and carting timber is an evil, and the amount of such outlying advances should be recovered as promptly as possible, but the Chief Commissioner believes the system cannot at once be abandoned. Mr. Read represents that any restrictions on the Conservator's operations in this respect would be almost tantamount to a stoppage of the exportation of wood from our Forests, as the Nepalese procure all their timber carriage from our territory, and their Agents are always present and ready to make advances, and thus secure for the season the whole of the somewhat limited supply of carriage.

5. *Paras.* 31 *to* 40.—The far greater proportion of the timber felled in the Forests west of the Korially finds its way through Pelebheet and by the "Deoha" river to the Ganges, and comparatively little from these parts is rafted down the Gogra to Byram Ghât. The demand for timber to the westward is sure to increase, and the Rohilkund Forests can do little to meet it. The Chief Commissioner is therefore strongly in favor of building a bridge of boats over the Sardah, and will instruct Mr. Read accordingly; such a bridge was established previous to the mutinies.

6. The Chief Commissioner declined to sanction the scheme last year, because it was placed before him in a very crude and incomplete form, and because, by the agreement made with the Government, North-Western Provinces, by the Officiating Chief Commissioner, no profit could have been expected. But the Chief Commissioner has just come to an arrangement with that Government by which the entire proceeds of the bridge, after payment of Rs. 2,000 for compensation to the Shahjehanpore landholders, who have a lease of the Ferry under their settlement engagements, will be secured to the Forest Department.

7. *Paras.* 41 *to* 44.—The Chief Commissioner may here observe that his instructions to Mr. Read are to sell all timber by auction, as a general rule, though, if he thinks any private offer he may receive more advantageous to the Government, he may recommend its acceptance to the Chief Commissioner, with a full explanation of his reasons for preferring this mode of disposing of the timber to public sale.

8. Mr. Read is strongly opposed to the proposal made in the 45th, 46th, and 47th paras. of Dr. Brandis's Report to remove the Oudh Timber Depôt from its present position at Guttia Ghât to the Kunhout Nuddee. From the present Depôt, timber, he says, can be conveyed direct either to Bareilly, Pelebheet, Cawnpore, Seetapore, or Byram Ghât and Lucknow, whereas the head of the Kunhout Nuddee is in the direct route to Cawnpore only, and would entail the loss of the markets above-named, or rather they could only be gained by additional land carriage, and consequent depreciation in the value of our timber.

The reason, Mr. Read goes on to say, why Kumaon timber realizes a higher price at the Kashipore Depôt than the Oudh timber at the Sardah Depôt, is apparent from the fact that the former has the entire monopoly of the timber trade at that point, the whole of the Forests west of the Sardah being Government property; whereas the Oudh timber has to compete against the vast stores of timber always available for sale along the Nepal frontier. The Chief Commissioner considers there is much force in these arguments, and would certainly suspend any decision on this question till he has had an opportunity of conferring personally with Mr. Read on it.

9. With reference to para. 48 of Dr. Brandis's Report, the Chief Commissioner begs to explain that the Railway authorities, to whom the sleepers were first offered, referred us to Mr. Palmer, who had a contract from them, and as Mr. Palmer declined our terms, which were to take all the sleepers at Rs. 2-8 and 2 each, or at the rate of 8 annas the cubic foot, claiming to make his selection at this price, no transaction took place, and the sleepers are still undisposed of. If not taken by the Railway authorities, to whom they have been again offered at the prices above-mentioned, they will be disposed of at the ensuing annual sale by auction.

10. The Chief Commissioner is disposed to agree with Dr. Brandis on the inexpediency of cutting sleepers in the Forests, unless the Railway Companies are in special need of assistance. The Branch Railway Company would probably take the smaller class of sleepers.

Paras. 55 *to* 58.—The Chief Commissioner thinks that the Superintendent may be left to exercise his discretion on the points here noticed. He will be instructed to attend to the suggestion in para. 59.

11. *Para.* 60.—Of course, the rules have no legal force, and nothing should be prohibited that is not punishable by law; but the Penal Code will, most probably, provide penalties for any act it is found necessary to prohibit. The 3rd clause will be modified accordingly.

12. *Paras.* 62 *to* 65.—The Chief Commissioner's own observation fully confirms the truth of the conclusion formed by Dr. Brandis and Mr. Read as to the excessive injury done to the Forests by fires. They can, of course, be prohibited in the tracts reserved for Government, although the consequence will be a loss of some Rs. 3 or 4,000 per annum from grazing dues; no such interdict can be imposed on the proprietors of villages in those tracts within the limits of their estates. They must, however, if they set fire to the grass on their own estates, take precautions that the flames do not spread to the Government Forest, or they will render themselves liable to punishment under Section 285 of the Penal Code, "Injury" being defined in Section 44 of the Code to mean harm to property as well as to person. There is nothing unreasonable in this; for the Chief Commissioner believes that the conflagration would not be complete, as it is at present, unless commenced in an organized way by bodies of men acting in concert; accidental fires would be partial in their effects.

13. The loss of revenue from the grazing dues now realized is a trifling consideration, not to be weighed for a moment against the improvement of the Forests, but there is one that deserves more attention, and that is, the loss of pasturage; for thousands of cattle are sent annually from long distances to these grazing grounds, which, in seasons of drought like those of 1860-61, would otherwise perish. There can be no doubt that, unless the old grass is burnt, the new, that alone supplies fodder, will not spring up. The Chief Commissioner is inclined, however, to think with Dr. Brandis and Mr. Read that the Nepal Forest tracts will afford ample grazing ground. He therefore recommends the prohibition of fires.

14. *Paras.* 65 *to* 66.—The Chief Commissioner has urged on Mr. Read the importance of destroying the creepers, and he will be instructed to prosecute the work vigorously next cold season in the manner described by Mr. Read.

15. With reference to paras. 67 and 68 of the report, the Chief Commissioner thinks it will be advisable to defer commencing the thinning process until Mr. Read has completed the demarcation of the remaining Forest tracts, and submitted an estimate of the probable cost of the scheme. The population in the vicinity of the Forest is too scanty to afford a market for the third class trees, and the Chief Commissioner agrees with Mr. Read in thinking that no one not belonging to the Forest Department should be allowed to cut and remove them.

16. The Chief Commissioner thinks the addition to the present strength of the Preventive Establishments, recommended in paras. 69 to 82 of the report, will prove beneficial, and agrees in the proposed distribution; details may safely be left to Mr. Read's discretion.

17. In regard to paras. 83 to 102, the Chief Commissioner must observe that he sees no objection to placing the grassy plains or phantas lying between the reserved Government Forests, and also a portion of the land surrounding them, under the control of the Forest Department, and to forbidding the grant of waste lands within those limits. But he cannot exactly follow Dr. Brandis's definition of the proposed limits, nor has Dr. Brandis, in a demi-official reference, succeeded in explaining his intentions. On the north the limits are, the Chief Commissioner thinks, clearly defined by the Mohan river, which is also the Nepal boundary line. From the Mohan to Newal Khar, *vide* map, the Nepal frontier should form part of the Forest boundary on the west, south of Newal Khar; the boundary will include certain tracts of Sissoo Forests, and then running due east will embrace other Sissoo

tracts, and be carried to a point near the village of Bunneepore (*vide* map.) From thence the line can be extended to a convenient point on the Korially river. Mr. Read, in conjunction with Captain Anderson, can define these limits early in the approaching cold season, and mark them by masonry pillars at the different angles, which the Chief Commissioner thinks preferable to wooden posts, as proposed by Dr. Brandis.

18. No private rights will be affected by the arrangement, nor is it necessary to make a regular settlement of any cleared land as proposed by Dr. Brandis; the cultivated areas of villages will be demarcated with the addition of a due proportion of waste land, and the proprietorship be decided at settlement, to rest with the Government or individuals, as provided for in the instructions issued to the Superintendent of Demarcations, for the demarcation of the waste lands of the Lukheempore District in the approaching cold season.

19. *Para.* 96.—The grazing lands, it may be observed, do not belong to the Talookdar, he holds them only on temporary lease; all the waste lands in this part of Oudh were declared the property of the State at annexation and at the settlement of 1858.

20. The Chief Commissioner is in favour of establishing plantations of Sâl, Sissoo, Toon, and other valuable trees on the land thus made over to the Forest Department, and Mr. Read will be called on to furnish, for the consideration of the Chief Commissioner, his views and the steps he would suggest for the carrying out of the object in view.

21. Copies of paras. 84 to 102 will be sent to Captain Anderson, with a request that he will, if possible, comply with the suggestion therein made.

22. Mr. Read will attend to the recommendation conveyed in paras. 103 to 110.

Paras. 111 *to* 114.—The Chief Commissioner is not prepared to recommend an extension of Establishments until the survey and examination of the Forests east of the Korially are completed, and it is known what their resources are, and what additional income may be expected from them.

23. *Paras.* 115 *to* 117.—Mr. Read's official designation may properly be changed to that of Conservator of Forests. The Chief Commissioner also thinks he should reside at Lucknow from the 15th September to the end of October, while the report of last year's operations and the projects of the ensuing year are under preparation and discussion. But he sees no objection to his passing the time from the 15th May to 15th September on the hills. The Chief Commissioner gave his reason for corresponding with Mr. Read through the Commissioner of Khyrabad in a letter to Government, No. 119, dated 2nd February; but since a new Commissioner, ignorant of the localities and of the past history of Forest management, has taken the place of Colonel Barrow, and as the Chief Commissioner has lately passed some time in the Forests with Mr. Read, and made himself acquainted with all Forest questions, he is inclined to agree that the interposition of the Commissioner may be dispensed with.

In justice to Mr. Read, the Chief Commissioner must not allow an impression to be formed from the concluding parts of Dr. Brandis's 117th para. that, up to the present time, nothing has been done. As already observed at the outset of the letter, the measures recommended by Dr. Brandis are, for the most part, essentially the same as those which have been in progress for the past two years under Mr. Read's superintendence; though, until the Forests shall have been completely surveyed and their limits fixed, compartments formed, and their resources accurately ascertained, these measures could not be carried out so effectually as will hereafter be practicable. On the other hand, the Chief Commissioner has shown that he has not undervalued most of Dr. Brandis's suggestions.

Joint Memorandum on the export of Timber from the Oudh Forests, by DR. D. BRANDIS, *Inspector General of Forests, and* CAPTAIN E. S. WOOD, *Officiating Conservator of Forests, Oudh,—dated Simla, 29th September* 1868.

At present felling operations will only be conducted in the 1st or Khyreeghur Division.

2. For the timber from this division there are two natural lines of export.

I.—To the south-east, *viâ* the Mohan or Sohelee, Korially, and Gogra rivers, provided the Mohan and Sohelee prove fit for floating, otherwise *viâ* the Sardah and Gogra. This line will supply Byram Ghât, Fyzabad, Lucknow, and Cawnpore. On this line there are the following competitors :—

1*st*.—The Nepal timber from the ceded Terai, on both sides of the Korially river.

2*nd*.—For the country lower down the Gogra and Ganges rivers, the Nepal timber floated down the Raptee and Great Gunduk rivers.

II.—To the west and south-west, to Bareilly, Allygurh, Shahjehanpore. The competitors on this line are—

1*st*.—The Nepal timber from the Forests east of the Sardah river.

2*nd*.—The Kumaon Forests.

3. To meet the existing demand in these two directions, it appears to us that the following arrangements should be made :—

4. *South-East Line*.—At present, and for some years to come, felling operations will be carried on in the north-west portion of the Forests, whence the timber will be carted to the Sohelee, or, should this river prove impracticable, to the Sardah. When all mature and sound timber shall have been felled in this portion, operations will be continued in the southern and eastern portions, and from these parts the timber will be carted to the Mohan, or direct to the Korially river. For the next twenty years, however, felling operations will be in the vicinity of the Sohelee river, and the following will be the arrangements for the export of this timber :—

The logs will be carted from the Forests to Doodooa Ghât, or another Ghât lower down on the Sohelee, thence to be floated down that river to Shitaba Ghât, where the Sohelee joins the Korially. This part of the floating can only be done from July to November. To supervise this part of the work, a Depôt Darogah will be required, who will receive the timber from the carters before the rains commence, and then make arrangements for rafting it down to Shitaba Ghât. This is on the assumption that logs of all sizes can conveniently be floated down the Sohelee river. If it should be found necessary to cart them across to the Sardah, other arrangements will have to be made. At Shitaba Ghât another Darogah should be stationed, who will, after November, when the river commences to subside, send the timber down to Byram Ghât. One contract will be made for the floating above Shitaba Ghât, and another from that place to Byram Ghât.

5. At Byram Ghât will be the sale depôt for this timber, and the Darogah should be stationed there, who will receive the logs and deliver them to purchasers. A suitable place for the depôt should be selected and secured with the aid of the Deputy Commissioner. The question whether the timber should be sold by indent, or by regular periodical public auctions at fixed times, may be decided after further experience shall have been gained.

Hereafter we hope that the Forest Department may abandon the duty of carrying the timber from the Forests to Byram Ghât, and that then a sale depôt may be established at a convenient place on the Sohelee river, or at the point of junction with the Korially.

Thus the sale depôt at Byram Ghât should be looked upon as a temporary arrangement only, until purchasers from that side are prepared to come up to the vicinity of the Forests.

Until that time, however, it will be expedient to sell timber to purchasers from that direction at Byram Ghât only, so as not to raise competition against the Department in the matter of floating.

6. The Byram Ghât Depôt must, as far as accounts go, be under the Assistant in charge of the 1st Division, who will be able to reach it from Luckimpore *viâ* Lucknow in two nights' dawk; but orders regarding sales and other matters will, from time to time, be issued direct to the Darogah by the Conservator.

7. *West and South-West Line.*—To facilitate the export of timber in that direction, a bridge of boats across the Sardah was constructed in 1865. Owing to changes in the course of the river, this bridge must be moved lower down, and will probably be placed somewhere between Pullia and Bhira. For the present the bridge should remain in the hands of the Forest Department, as it is mainly required to facilitate the crossing of timber.

From this place, where the bridge is intended to be put up, the routes for timber to be sent to Bareilly in the west, and to Shahjehanpore in the south-west, diverge, and it does not on this account appear expedient to maintain the former plan of establishing a depôt for the sale of timber on the banks of the Kunhout Nuddee.

8. The question, however, arises, whether the depôt should be established on the right bank of the Sardah river near the bridge of boats, or on the Sohelee river in the vicinity of the Forests. There are grounds in favor of either arrangement, and the decision may perhaps be deferred until further experience has been gained. Among other circumstances, the decision will be influenced by the fitness or otherwise of the Sohelee river for floating. Should the floating down this river prove impracticable or difficult, all the timber will have to be carted across the Sardah, and in that case the sale depôt should be on the right bank of that river. Should floating down the Sohelee prove practicable, it may be considered expedient to limit all carting on account of the Forest Department to the immediate vicinity of the Forests, and to sell the timber at a suitable locality near the Sohelee river.

9. The arrangements here proposed will require the appointment of four Depôt Darogahs, *viz.*—

One for Byram Ghât.

Two for floating from the Forests to Byram Ghât.

One for sale depôt on the Sohelee or Sardah.

The last named man may have chargeof the bridge of boats also, in case the sale depôt is established on the right bank of the Sardah river.

Depôt Overseers have hitherto been entertained on the work establishment, but it appears expedient to include them in the regular scale, and to give them the same rank and similar rates of pay as the Forest rangers proposed to be appointed, who should, with the Depôt Darogah, be included in one general list for the province, so as to give good men some certain prospects of promotion.

No. 1591, dated 20th October 1868.

From—LIEUT. COLONEL C. W. HUTCHINSON, R. E., *Secretary to the Chief Commissioner, Oudh, Department Public Works,*

To—The Inspector General of Forests.

With reference to the memorandum on the export of timber from the Oudh Forests, forwarded with his No. 58, dated 5th instant, states that the Chief Commissioner entirely agrees with the proposals therein made, and will direct the Conservator to give effect to them at once.

Joint memorandum on the plan of operations in the Oudh Forests for the next two years, 1868-69 *and* 1869-70, *by* DR. D. BRANDIS, *Inspector General of Forests, and* CAPTAIN E. S. WOOD, *Officiating Conservator of Forests, Oudh,—dated Simla,* 1*st October* 1868.

Any plan of operations in Forests, which it is intended to bring under regular management, should relate to the following matters :—

I.—Felling of mature timber, and thinning operations.

II.—Improvement of the Forests, by working the ground, sowing, planting, draining, and other work.

III.—Division of the Forest into compartments and communications.

2. The present plan of operations in the Oudh Forests must of necessity be of a preliminary nature. It comprises two years only, 1868-69 and 1869-70, and relates principally to the operations in the 1st Division, for in the 2nd and 3rd Divisions it does not yet, for various reasons, appear expedient to commence regular felling operations.

3. In the 1st or Kheree Division, timber has hitherto been felled in the north-east portion of the Forests only. Altogether 12,000 trees have here been felled since 1861, but the trees selected were more or less scattered over the Forest, and not cut in certain defined localities.

4. The first question is, what proportion of the mature trees, in girth 6 feet and above, may be removed without interfering with the reproduction of the Forest? Some data regarding the proportion of the trees of different classes have been obtained by the Forest Surveys made in 1863 by Messrs. Brandis and Read, and in 1867 by Captains Wood and Losack. The results of these surveys may be summarized as follow :—

	1863.		1867.				
	SAL.		SAL.		ASNA.	MISCELLANEOUS.	TOTAL.
	On 204 acres.	On 10 acres.	On 177 acres.	On 10 acres.	On 10 acres.	On 10 acres.	On 10 acres.
I Class above 6′ girth ..	703	33	524	29	7	2	38
II „ „ 4′6″ „ ...	1,190	58	630	35	12	4	51
III „ „ 3 „ ...	6,955	340	1,751	98	48	35	181
III „ „ 1′6″ „ ...			3,504	197	72	183	452
TOTAL ...	...	431	...	359	139	224	722

5. These surveys were made in different parts of the 1st Division; they agree in showing that there is an ample stock of the 2nd and 3rd classes. Another result of Captain Wood's surveys of last season is, that the unsound trees, which do not yield marketable timber, are very numerous, and Captain Wood thinks that nearly two-thirds of the 1st class trees will be left standing, because unfit for removal.

6. In Dr. Brandis's memorandum on the management of the Oudh Forests, dated 23rd June 1863, it was proposed that, as a commencement, not more than one in four 1st class trees be felled in any part of the Forests, in order to have a sufficient number of trees on the ground for seed and shelter.

With the additional data now obtained, this rule may be modified, and, as an experiment, all sound 1st class trees likely to yield good marketable timber may be felled. This will still leave a considerable proportion of 1st class trees standing, which, together with the 2nd and 3rd class trees, will probably be sufficient to secure a healthy reproduction of the Forests. Indeed, when the number of 2nd class trees is considerable, it may hereafter be considered whether the standard size of the trees to be felled may not be lowered.

7. Some latitude should, however, be left to the discretion of the officer conducting these operations. Thus, where trees stand far apart, and on the edge of the Forest, a smaller number only, or no trees at all, should be felled.

With this reservation, we consider it expedient that, by way of experiment for the next few years, all sound 1st class trees that will yield marketable timber be felled in those tracts where felling is going on. It is believed that, besides Sâl, the timber of two other reserved kinds, Asna and Huldoo, will find a ready sale, and of these two kinds also, all 1st class trees that will yield sound and marketable timber should be felled.

8. The next question is, how shall the annual fellings be limited? The two different methods of effecting this, by either defining the area of the annual fellings, or by limiting the quantity of timber to be felled yearly, were indicated in the memorandum of 1863. In both cases, the length of rotation must be determined, and this will depend on the rate of growth of the trees in the Oudh Forests.

9. From the data at our disposal in 1863, the following scale of growth had been formed :—

Age 50 years, girth 4′ 6″
„ 80 „ „ 6′ 0″

Captain Wood believes that on an average there are 8 concentric rings on each inch of radius near the centre, and 10 in the outer portion of the tree, and assuming that each ring corresponds to one year's growth, he concludes that the following may be assumed as the average rate in the Oudh Forests :—

Age 65 years, girth 4′ 6″
„ 95 „ „ 6′ 0″

10. These data give 30 years as the time during which the present stock of mature trees may be removed, so as to allow the 2nd class trees to take their places.

In the memorandum of 1863 it was proposed to increase this time to 40 years, and, considering the great uncertainty which as yet exists concerning the rate of growth of the Sâl tree, it will be safer to accept this figure.

The removal of all marketable 1st class trees within this period of 40 years might be effected by dividing the Forest into 40 compartments of about the same productive power, and restricting the felling operations of each year to one compartment only.

11. But, as explained in 1863, an arrangement of this kind can only be carried out when a more complete knowledge of the Forests shall have been obtained, and until such time the annual felling operations must be limited by quantity, that is, the maximum number of trees to be felled annually must be fixed.

12. The Sâl Forests in this division cover an area of about 150 square miles, which, at the rate of Captain Wood's surveys, (29 Sâl and 7 Asna trees, both 1st class, on 10 acres, or total 2,304 per square mile), may be supposed to contain a growing stock of about 3,45,600 1st class trees, of which, however, one-third only, or 1,15,200, is likely to be fit for removal. Distributing this over 40 years, we have 2,880 trees (Sâl and Asna) as the limit of the annual fellings, which, to include Huldoo (not taken into account in the calculation), may be raised to a total of 2,900 trees.

In 1863, 4,000 was fixed as the limit for Sâl alone, but at that time one-half only was allowed for losses from unsoundness and other causes, whereas now the loss is assumed at two-thirds.

13. Since 1861, or during the first seven years of the establishment of the Department, 12,000 trees have been felled, instead of 20,160, the limit fixed by the present estimate.

There has therefore not been any overfelling; but, on the other hand, it does not appear advisable at present to increase the yield, on account of the smaller number of trees felled in previous years.

14. Now as to the locality where timber should be felled during the next two years, it is desirable, first, to take in hand those parts where felling has been commenced, and to clear out all marketable trees of the 1st class, and then close those tracts absolutely against cattle and all ingress and interference, until the young Forest is old enough to take care of itself.

A line, 100 feet wide and 15 miles long, has been cleared in a north-westerly direction, from Doodooa Ghât on the Sohelee river, to the Nepal boundary line near Gwaree Ghât.

This line divides the western part of the Forest into two main sub-divisions. There has been felling on both sides of the lines as far southwards as a line running from Newal-Khar to Mussan Khum. On this line felling should now commence, and proceed to the north-west, but it should be limited to the south-west side of the main line mentioned above.

15. The line where operations are commenced, as well as that where they are closed, should be cleared to a sufficient width of inflammable matter, and the greatest care should be used to guard against the inroad of fires into the block where felling operations have been completed.

It may be useful early in the season, before the grass is quite dry, to fire a belt all round the block, and all round the edge of the grassy plains.

16. Next year, 1869-70, the work would be continued where it will be closed this year, and when it has been completed south-west of the main line, the north-east sub-division should be taken in hand, work commencing in the north, and proceeding towards the south-east.

17. As said above, on the outer edge of the Forest, and inside along the open grassy plains, a belt of Forest should be left untouched, partly to serve as shelter, partly to secure the springing up of seedlings outside the Forest. This is important.

18. It is believed that Sâl timber, being too heavy when green, cannot be carted away the season it is felled, though from other Sâl Forests green timber is removed. This is a serious drawback, as it exposes the logs to the risk of being burnt. On

the other hand, one year's seasoning in the partial shade of the Forests protects the timber against cracking and splitting. Some endeavours should be made hereafter to modify this practice, and to collect all timber in suitable places on the edge of the Forest where it can easier be protected against fire. Should this not be found practicable in Oudh, all trees should at least be logged and barked, and every precaution should be used to guard against their being burnt. Logs of Asna and Huldoo will, it is hoped, be carted out at once.

19. Main branches and tops which are saleable should be lopped and barked, not left lying scattered about, but collected, as far as possible, near the edge of the Forest in suitable places.

20. The disposal of those pieces of the tops and branches which are not saleable will require special attention. If we could make sure of keeping out fires from the worked out portions of the Forest, there would be no difficulty; they might remain in the Forest, and would gradually decay, enrich the soil, and help on the growth of young trees. But for some time to come it may not be possible absolutely to guard against fires, and it will, therefore, be safer to remove or to destroy them.

The surrounding villagers should be induced to take away as much as possible of this wood, and what remains must, if it cannot be turned to account in any way, be collected and burnt. In course of time, perhaps, an experiment may be made to prepare charcoal and to export it. Wood ashes will not, it is feared, command a sufficient price.

All old timber lying about in this and other parts of the Forests should, if possible, be removed this year.

21. *Thinning operations.*—Doubtless there are tracts of young Sâl Forest where the thinning out of the weaker stems would be useful. Such tracts should be carefully examined, and definite proposals for thinning operations should be made in the course of the next two years, when the work to be done in such localities will be determined on.

22. *Cutting of Creepers.*—The creeper-cutting operations should, if possible, be completed within the next two years in all parts of the Forests.

23. *Sissoo Forests.*—It is supposed that there is none, or very little mature Sissoo fit for cutting in the Forests, and the Sissoo tracts have not been sufficiently examined to frame a regular plan for working them. But a commencement should be made to further the natural renovation of the Sissoo Forests by cutting and removing the mature trees that can be utilized, and that are not required for seed or shelter, by ploughing or otherwise opening out the ground not covered with seedlings, and where necessary by sowing seed broadcast. This will be an experiment, the success of which is not certain. Such tracts should be absolutely closed against cattle and other interference, and be protected against fire.

24. *Khair Forests.*—It is probable that Khair can advantageously be cultivated on a portion of the low ground between the Forests. Experiments should be made after carefully studying the circumstances under which Khair springs up naturally.

25. *Division of the Forest into blocks and compartments, and roads.*—Two main division lines through the Forest have been cut; as they will facilitate the export of timber, they should be converted into fair weather roads, and made passable for carts. A third main division line should be cut from Doodooa Ghât in an east-south-easterly direction, in the direction marked A D on the map, showing the sub-divisions of the Kheree Forests.

These three lines will divide the Forest into four sub-divisions, which should be designated by appropriate local names. Minor division lines may be cut, commencing in the north-west part of the Forest. As the ground is level, or

nearly so, the lines should be laid either at right angles to the main line, or so as to form sub-divisions having the form of regular geometrical figures, and, as far as practicable, containing nearly equal areas of Forest land.

The objects of cutting these lines are—

1st.—Division of the Forest into blocks and compartments.

2nd.—To facilitate communication, control, and the carriage of the timber.

3rd.—To aid in keeping out fires.

Wells should be dug at convenient places, and a few resting-houses, to afford shelter during rainy weather, should be built.

No. 1604-5, dated 23rd October 1868.

From—LIEUT. COLONEL C. W. HUTCHINSON, R. E., *Secretary to the Chief Commissioner, Oudh, Department Public Works,*

To—The Conservator of Forests, Oudh.

Forwards copy of memorandum of proposed Forest Operations during 1868-69 and 1869-70, received from Inspector General of Forests, and states that the proposals are approved by the Chief Commissioner, and Conservator is to consider them as Standing Orders for his guidance in the management of the Khyreeghur Forests for the next two years.

2. With reference to para. 14, states that, although it is highly desirable to close the exhausted compartments against cattle, this is a point which must be separately considered in each case at the time, with reference to the interests of the surrounding population.

No. 1605.

Copy of the above forwarded to Inspector General of Forests for information.

Memo., dated 25th October 1868, *by* DR. D. BRANDIS, *Inspector General of Forests, on the arrangement of Heads of Forest Reports.*

Standing Order No. 2 of October 1866 directs that the main divisions of Annual Forest Reports should, as much as possible, be in accordance with the following headings :—

Section I.—Inspection of Forests.
" II.—Reserves.
" III.—Plantations.
" IV.—Yield of the Forests.
" V.—Financial results.
" VI.—General remarks.

Since that time, considerable progress has been made in some provinces, especially in Oudh and the Central Provinces, in the demarcation of State Forests, and in these provinces, therefore, it may now be expedient to adopt another and more rational arrangement of headings.

The old classification, with such amendments and additions as the peculiarities of each case demand, may still be retained in those provinces where State Forests have not yet been demarcated, or where the operations in this direction have only been commenced. But hereafter, as further progress is made, the arrangement of Annual Reports may be gradually assimilated to the one here proposed.

The Reports might usefully consist of an Introduction, a Special and a General part. The Introductory remarks should give the main statistical data of the province, area cultivated, culturable waste, unculturable waste, forest land, population. A brief account of the different divisions and districts should be given, as well as of the principal towns, with special reference to the sources whence the inhabitants derive their supply of timber, wood, grass, and other Forest produce.

General remarks regarding the position of the principal Forests, and their distribution over the province, might be added.

These introductory remarks should also contain an account of what has been done for Forest legislation in the province. The existing rules and amendments, or additions introduced during the year, should be stated.

It need not be mentioned that a complete account of these matters, statistical and legislative, will be given once only; and that in subsequent Reports, new measures and changes only will be recorded. This remark refers to the different sections of the Report, as well as to the introductory remarks.

The Special part should be divided under three heads, as follows:—

I.—State Forests, and Forests leased by the State.

II.—District or unreserved Forests.

III.—Village Forests, and private Forests.

The progress made in the administration of the State Forests and leased Forests, might be reported in five distinct sections.

The 1*st Section* would enumerate the State and leased Forests; give a brief descriptive account of each; state their areas, boundaries, the state of the boundary marks and boundary lines. Progress in demarcating these Forests, as well as changes in the area, by sale, exchange, and lease, would here be noted.

In the 2*nd Section*, the requirements, in the matter of wood and other Forest produce of the population in the vicinity of the State Forests and leased Forests, would be discussed; it would be explained where, and under what conditions they have hitherto provided themselves with the needful wood, grass, and other articles of Forest produce; rights of usage, or prescriptive rights, would be explained; and the measures taken towards effecting a commutation of these rights, or towards regulating the exercise of the same, would be reported.

The 3*rd Section* would be devoted to the measures relating to the protection of the Forests, the organization of the protective establishment, Magisterial powers of Forest Officers, breaches of the Forest Rules, the detection, prosecution, and punishment of offenders.

The 4*th Section* would give an account of all that has been done in the general management and improvement of the Forests. The first three sections will generally be short, but the fourth should give a detailed account of a variety of matters, which, however, cannot as yet be divided into several sections. They might be arranged in the following order:—

Topographical and valuation Survey of the Forests.

Division lines; formation of blocks and compartments.

Plan of operations regarding the felling of mature timber, and thinnings.

Improvement and extension of the Forests, plantations, sowings, cutting of creepers, communications in and to the Forests, roads, bridges, canals, blasting of rocks in streams, clearing of rivers.

In this section would fall an account of the operations for creating new Forests by sowing or planting, such as the fuel-plantations in the Punjab.

Under the *5th Section*, the actual yield, and the mode of working the Forests, would be reported. The out-turn of the felling and thinning operations, and of the sales of other Forest produce, would be stated; the system followed in the disposal of the timber, wood, and other Forest produce would be explained, and an account be given of timber operations, management of depôts, and lines of export.

It will not be necessary to suggest specific sections for the report of the administration in the unreserved or district Forests Measures relating to any of the five sections proposed in the case of State and leased Forests might be reported in the order indicated above.

Under the third head of "Village and Private Forests," not much will, as a rule, be recorded, unless it should hereafter be decided to exercise a supervision by the Government over such Forest lands.

Thus far the first or Special part of the Annual Report.

The second or General part would contain a Report of Progress under the following two heads, with regard to all classes of Forests:—

1st.—Financial results.

2nd.—General remarks.

Under the second head a variety of subjects, not appertaining to any of the previous sections, might be noted, such as trade in timber, wood, and other Forest products, export and import of these articles, system of departmental accounts, duties of Establishments, and the manner in which they have been performed, services of officers, and other personal matters.

The following is a summary of the arrangement here proposed:—

Introduction.—Statistical data, and Forest legislation.

First Part—Special.

I.—State Forests and leased Forests—

1.—Area, boundaries, descriptive account.

2.—Requirements of the surrounding population, prescriptive rights.

3.—Protection.

4.—Management and improvement.

5.—Yield and working of the Forests.

II.—Unreserved or district Forests.

III.—Village and private Forests.

Second Part—General.

I.—Financial results.

II.—General remarks.